

| Chemical                   | IUR<br>(per<br>$\mu\text{g}/\text{m}^3$ ) | US EPA<br>WOE/ Year                          | Human<br>Data                                 | Animal<br>Data             | Geno-<br>toxicity                                 | Extrapolation<br>Method                              | Species | Endpoint  | Model<br>Used                             | PBPK<br>Model |
|----------------------------|---|--|---|----------------------------|---|--|---------|---|---|---------------|
| Formaldehyde               | 0.00066                                   | Supports<br>carcinogenicity/<br>2010 (Draft) | Supportive,<br>but alone<br>not<br>sufficient | Strong<br>support          | Data<br>suggests<br>genotoxicity                  | Linear<br>extrapolation<br>from the POD              | Human   | Nas o -<br>pharynge<br>al cancer,<br>Hodgkin<br>lymphoma<br>and<br>leukemia | --  | Yes           |
| Vinyl Chloride             | 0.0000088                                 | A/2000                                       | Sufficient                                    | Sufficient                 | Yes -<br>Metabolites                              | Linearized<br>multistage<br>method                   | Rat     | Liver<br>tumors   | Linearized<br>Multistage<br>Model         | Yes           |
| Benzene                    | 0.000002 -<br>0.0000078                   | A/2003                                       | Strong<br>evidence                            | Limited<br>evidence        | Suggestive<br>but not<br>conclusive               | Low-dose<br>linear;<br>maximum<br>likelihood         | Human   | Leukemia  | --  | No            |
| Trichloroethylene<br>(TCE) | 0.0000041                                 | CH/2011                                      | Modest  | Clear<br>evidence          | Data<br>suggests<br>potential for<br>genotoxicity | Linear low<br>dose-<br>extrapolation                 | Human   | Kidney<br>cancer;<br>Non -<br>Hodgkin's<br>lymphoma<br>; Liver<br>cancer    | Weighted<br>linear<br>regression<br>model | No            |
| Epichlorohydrin            | 0.0000012                                 | B2/1988                                      | Inadequate                                    | Sufficient                 | Suggestive  | Linearized<br>multistage<br>procedure,<br>extra risk | Rat     | Kidney<br>lesions   | --  | No            |
| Tetrachloroethene          | 0.0000002<br>6                            | LH/2012                                      | Evidence of<br>association                    | Evidence of<br>association | Insufficient                                      | Linear<br>extrapolation                              | Mouse   | Liver<br>tumors   | Multistage<br>model                       | Yes           |

US EPA WOE (2005 Guidelines) = CH - carcinogenic to humans; LH - likely to be carcinogenic; US EPA WOE (1986 Guidelines): A - human carcinogen; B1 - probable carcinogen, limited human evidence; B2 - probable carcinogen, sufficient evidence in animals

\* Draft version available - currently under public comment

\*\* Only an IRIS Summary was available, not a full ToxProfile

# The draft reassessment is currently in the scoping and problem formulation portion. Therefore, no updated assessment has been performed.

PBPK: physiologically based pharmacokinetic (model)

IUR: inhalation unit risk

**APPENDIX B  
SUMMARY OF EPIDEMIOLOGICAL EVIDENCE OF KNOWN OR  
LIKELY CARCINOGENIC COMPOUNDS CLASSIFIED BY US  
EPA**

**Summary of the Epidemiological Evidence of Chemical Carcinogens Classified as Known or Likely Human Carcinogens by IARC and/or US EPA**

| <b>Compound</b>                                    | <b>Sources</b>   | <b>Outcomes with strong evidence</b>  | <b>Types of studies</b>  | <b>Quantification (if possible)</b>   | <b>Conclusion</b>   |
|--|--|---|--|---|---|
| Benzidine  | US EPA 1987a;<br>Meigs et al. 1986;<br>Tomioka et al. 2016;<br>Golka et al. 2004;<br>IARC 2012 | Bladder and lung cancer   | Several occupational epidemiology studies from the 1980s to 2000s for bladder cancer; 23 retrospective cohort studies from 1970s-2010s for lung cancer   | SIR (bladder cancer) = 3.43, 95% CI: 1.48-6.76; (Meigs et al. 1986, cited in US EPA)<br><br>Pooled risk estimate (lung cancer) = 2.33, 95% CI 1.31-4.14 (Tomioka et al. 2016) based on meta-analysis of 23 cohort studies of highly exposed workers<br><br>30-fold to 75-fold higher risk of bladder cancer based on occupational cohort studies in China 1980s-2000s (Golka et al. 2004) | US EPA: Category A; IARC 2012: Group 1, "Benzidine causes cancer of the urinary bladder."<br><br>Risk of lung cancer is statistically significantly elevated; but confounding by co-exposure with beta-naphthylamine cannot be ruled out. (Tomioka et al. 2016)<br><br>"Toxicologically, benzidine has been the most important carcinogenic aromatic amine directed towards the human bladder." (Golka et al. 2004) |
| Bis (chloromethyl) ether (BCME)                    | US EPA 1988a;<br>IARC 2012;<br>Bruske-Hohfeld 2009   | Lung cancer   | Occupational epidemiology studies from the 1970s - 1990s   | "Among heavily exposed workers, the RRs are tenfold or more." (Bruske-Hohfeld 2009)   | US EPA: Category A; IARC: Group 1   |
| Nitrosodimethylamine (also N-Nitrosodimethylamine) | US EPA 1987b;<br>ATSDR 1989;<br>IARC 1978  | None specified in humans<br><br>Numerous multisite tumors in various animal species (inhalation and oral exposures) | Animal studies of oral exposure from 1970s - 1980s; two studies of inhalation exposure in animals from 1967<br><br>No studies of inhalation and cancer in humans; confounding by co-exposure cannot be ruled out | No risk estimates in humans available   | US EPA - Category B2; IARC - Group 2A   |

| Compound                                    | Sources  | Outcomes with strong evidence   | Types of studies  | Quantification (if possible)   | Conclusion   |
|---|--|---|---|--|--|
| Ethylene dibromide (also 1,2-Dibromoethane) | US EPA 2004; IARC 1999                               | None in humans. In animals, inhalation (long term) is associated with multi-site tumors | Three occupational epidemiological studies evaluated by US EPA deemed to be inadequate  | No risk estimates in humans available  | US EPA - Category LH; IARC - Category 2A "inadequate evidence in humans" but "sufficient evidence" in experimental animals   |
| Acrylamide                                  | US EPA 2010b; Pelucchi et al. 2011; IARC 1994        | Little evidence in humans. In animals, oral exposure associated with multi-site tumors  | 5 retrospective and prospective cohort studies of occupational exposure (inhalation/dermal) from the 1980s to the 2000s - no strong associations. Meta-analysis of occupational (inhalation/dermal) exposure found positive, but no statistically significant associations (Pelucchi et al. 2011) | Select SMRs (95% CI) of meta-analysis (Pelucchi et al. 2011): Pancreas, high exposure: 1.67 (0.83-2.99) Kidney, high exposure: 2.22 (0.81-4.84)  | US EPA: Group B2; IARC: Group 2A (Inadequate evidence in humans; sufficient evidence in animals).  |
| Polychlorinated biphenyls (PCBs)            | US EPA 1996; ATSDR 2000; Zani et al. 2013; IARC 2016 | Melanoma. Inconsistent findings for non-Hodgkin lymphoma, breast cancer                 | Many occupational cohort studies of PCB exposure, 1980s-2010s; limitations include small sample sizes, confounding exposures, and short follow-up.  | Occupational exposures. SMR for melanoma = 2.4, 95% CI: 1.1-4.6 (Ruder 2006, as reported by Zani et al. 2013) RR = 4.8, 95% CI: 1.5-15.1 for high exposures (Loomis et al. 1997)   | US EPA - Category B2. IARC - Group 1 Sufficient evidence for melanoma. For occupational exposures, "weak evidence of a major role of PCBs as human carcinogens" (Zani et al. 2013) |
| 1,3-Butadiene                               | US EPA 2002; IARC 2008                               | Lymphatic and hematopoietic cancers   | Many occupational cohort studies; stronger evidence of leukemia; suggestive link with non-Hodgkin lymphoma.   | US EPA: 43% to 336% increase in leukemia in styrene-butadiene rubber workers, adjusting for styrene and benzene. IARC: Most recent update of the styrene-butadiene rubber worker cohort shows no significant risk (IARC 2008). | US EPA: Group A; IARC: Group 1   |



| Compound          | Sources  | Outcomes with strong evidence | Types of studies   | Quantification (if possible)   | Conclusion   |
|-------------------|--|-------------------------------|--|--|--|
| Formaldehyde      | US EPA 2010c;<br>DRAFT IARC 2012;<br>Checkoway et al. 2015           | Nasal cancer<br>Leukemia      | Numerous cohort studies of occupationally exposed formaldehyde workers.  | Nasopharyngeal cancer:<br>RR = 4.14 for highest exposure<br>(Hauptmann et al. 2004, as reported by US EPA 2010)<br><br>All leukemia: RR=2.49, 95% CI: 1.13-5.49 for highest exposure)<br><br>Chronic myeloid leukemia:<br>RR=3.81, 95% CI: 0.36-40.44 for highest exposure (Checkoway et al. 2015) | US EPA - Category B1 (DRAFT); IARC - Group 1 - "Formaldehyde causes cancer of the nasopharynx and leukemia."   |
| Vinyl chloride    | US EPA 2000;<br>IARC 2012;<br>Ward et al. 2001;<br>Mundt et al. 2000 | Liver cancer                  | At least 14 cohort studies from the 1970s to 1990s of liver cancer in occupational workers, including 2 multicenter cohort studies (US and Europe)               | RR=28.3, 95% CI: 12.8-62.3 for very high exposures<br>(Ward et al. 2001)<br><br>HR=6.0, 95% CI: 2.5-14.4 for exposures ≥ 20 years of exposure (Mundt et al. 2000)  | US EPA: Category A; IARC: Group 1<br><br>Mundt: "deaths from liver cancers have occurred in excess, due to the well documented association between VCM and angiosarcoma of the liver."<br><br>Ward: "A strong relation is observed between cumulative VC exposure and occurrence of liver cancer." |
| Benzene           | US EPA 2003;<br>IARC 2012;<br>Khalade et al. 2010                    | Leukemia                      | Numerous occupational benzene-exposed workers in the chemical industry, shoemaking, and oil refineries.<br><br>Consistent excess risk of leukemia across studies | Pooled estimate (leukemia) 2.62 (95% CI, 1.57-4.39) for high exposures based on meta-analysis (Khalade et al. 2010)  | US EPA - Category A; IARC - Group 1 "sufficient evidence" in humans for leukemia.  |
| Trichloroethylene | US EPA 2011;<br>IARC 2014  | Kidney cancer                 | Numerous cohort and case-control studies with consistent evidence.   | Pooled estimate (RR) = 1.58, 95% CI: 1.28, 1.96 based on meta-analysis of highest exposure group (US EPA 2011)   | US EPA - Category CH; IARC - Group 2A  |

| Compound  | Sources  | Outcomes with strong evidence  | Types of studies   | Quantification (if possible)  | Conclusion  |
|---|--|--|--|---|---|
| Epichlorohydrin                                 | US EPA 1988b;<br>IARC 1999   | Inadequate data in humans. In animals, stomach and oral cavity cancers via oral and nasal tumors via inhalation exposure | 4 cohort studies (including 3 nested case-control studies) found weak and inconsistent associations with lung cancer and central nervous system tumors with no dose-response (IARC 1999)   | No risk estimates in humans available   | US EPA - Category B2, IARC - Group 2A, "probably carcinogenic to humans," based on animal studies, the "known chemical reactivity of epichlorohydrin and its direct activity in a wide range of genetic tests." |
| Tetrachloroethene<br>(Also tetrachloroethylene) | US EPA 2012;<br>IARC 2014<br>Pesch et al. 2000<br>Radican et al. 2008<br>Seidler et al. 2007 | Bladder cancer, non-Hodgkin lymphoma, multiple myeloma   | <b>Bladder cancer: 10-14% increased risk</b><br>Five of the six occupational high quality studies (dry cleaner or laundry workers)<br><b>Non-Hodgkin lymphoma:</b><br>Five cohort high quality occupational studies<br><b>Multiple myeloma:</b><br>Little evidence from lower quality but larger cohort studies. Some evidence with higher quality cohort and case control studies | <b>Bladder cancer:</b><br>RR = 1.8, 95% CI: 1.2, 2.7 high exposure (Pesch et al. 2000)<br><b>NHL:</b><br>RR = 3.4, 95% CI: 0.7, 17.3 for the highest exposure (Seidler et al. 2007)<br><b>Multiple myeloma:</b><br>Aircraft maintenance workers cohort<br>RR men: 1.71, 95% CI: 0.42, 6.91<br>RR women: 7.84, 95% CI: 1.43, 43.1<br>(Radican et al. 2008) | US EPA - Category LH, IARC - Category 2A  |

CI: confidence interval

HR: hazard ratio

IARC: International Agency for Research on Cancer

NHL: Non-Hodgkin lymphoma

RR: relative risk

SIR: standardized incidence ratio

SMR: standardized mortality ratio

US EPA: United States Environmental Protection agency

VC: vinyl chloride

VCM: vinyl chloride monomer

## **APPENDIX C MULTISTAGE WEIBULL MODELING OUTPUT**

```

=====
MultistageWeibullModel. (Version: 1.6.1; Date: 11/24/2009)
Solutions are obtained using donlp2 -intv, (c) by P. Spellucci
Input Data File: FMLAd1In.(d)
Tue May 02 10:15:41 2017
=====

Female Mouse Lung C+ I Grouped Incidental Risk 1-stage MSW model
~~~~~

The form of the probability function is:
P[response] = 1-EXP{ -(t - t_0)^c *
                (beta_0+beta_1*dose^1)}

The parameter betas are restricted to be positive
Dependent variable = CLASS
Independent variables = DOSE, TIME
Total number of observations = 199
Total number of records with missing values = 0
Total number of parameters in model = 4
Total number of specified parameters = 1
Degree of polynomial = 1
User specifies the following parameters:
    t_0 = 0
Maximum number of iterations = 16
Relative Function Convergence has been set to: 1e-008
Parameter Convergence has been set to: 1e-008

Default Initial Parameter Values
    c = 2.65306
    t_0 = 0 Specified
    beta_0 = 3.87553e-007
    beta_1 = 8.74531e-006

Asymptotic Correlation Matrix of Parameter Estimates
( *** The model parameter(s) -t_0
    have been estimated at a boundary point, or have been specified by the user,
    and do not appear in the correlation matrix )

    c          beta_0      beta_1
c          1          -0.99      -1
beta_0     -0.99          1          0.98
beta_1     -1          0.98          1

Parameter Estimates

                                     95.0% Wald Confidence Interval
Variable      Estimate      Std. Err.      Lower Conf. Limit      Upper Conf. Limit
c              2.7855         0.871309         1.07777         4.49324
beta_0         2.09796e-007     8.59988e-007     -1.47575e-006     1.89534e-006
beta_1         4.84999e-006     1.88357e-005     -3.20673e-005     4.17673e-005

Log(likelihood) # Param      AIC
Fitted Model      -85.7218         3      177.444

```

|      | Data Summary |   |    |   |       |
|------|--------------|---|----|---|-------|
|      | CLASS        |   |    |   |       |
|      | C            | F | I  | U | Total |
| DOSE |              |   |    |   |       |
| 0    | 46           | 0 | 4  | 0 | 50    |
| 0.74 | 21           | 0 | 28 | 0 | 49    |
| 1.2  | 16           | 0 | 34 | 0 | 50    |
| 1.6  | 8            | 0 | 42 | 0 | 50    |

## Benchmark Dose Computation

Risk Response = Incidental  
Risk Type = Extra  
Specified effect = 0.01  
Confidence level = 0.9  
Time = 105  
BMD = 0.00485752  
BMDL = 0.00394674  
BMDU = 0.00604099

```

=====
MultistageWeibull Model. (Version: 1.6.1; Date: 11/24/2009)
Solutions are obtained using donlp2 -intv, (c) by P. Spellucci
Input Data File: FMLAd1Io.(d)
Tue May 02 09:56:18 2017
=====

Female Mouse Lung C+I+U Grouped Incidental Risk 1-stage MSW model
~~~~~

The form of the probability function is:
P[response] = 1-EXP{ -(t - t_0)^c *
                (beta_0+beta_1*dose^1)}

The parameter betas are restricted to be positive
Dependent variable = CLASS
Independent variables = DOSE, TIME
Total number of observations = 200
Total number of records with missing values = 0
Total number of parameters in model = 4
Total number of specified parameters = 1
Degree of polynomial = 1
User specifies the following parameters:
    t_0 = 0
Maximum number of iterations = 16
Relative Function Convergence has been set to: 1e-008
Parameter Convergence has been set to: 1e-008

Default Initial Parameter Values
    c = 2.70833
    t_0 = 0 Specified
    beta_0 = 2.99752e-007
    beta_1 = 6.82409e-006

Asymptotic Correlation Matrix of Parameter Estimates
( *** The model parameter(s) -t_0
    have been estimated at a boundary point, or have been specified by the user,
    and do not appear in the correlation matrix )

    c          beta_0      beta_1
c          1          -0.98         -1
beta_0     -0.98          1          0.98
beta_1     -1          0.98          1

Parameter Estimates

Variable      Estimate      Std. Err.      95.0% Wald Confidence Interval
Lower Conf. Limit  Upper Conf. Limit
c              2.82393        0.86564         1.12731         4.52055
beta_0         1.75446e-007    7.14572e-007    -1.22509e-006    1.57598e-006
beta_1         4.07913e-006    1.57386e-005    -2.6768e-005     3.49262e-005

Log(likelihood) # Param      AIC
Fitted Model      -85.8823         3      177.765

```

| DOSE | Data Summary |   |    |   |       |
|------|--------------|---|----|---|-------|
|      | CLASS        |   |    |   | Total |
|      | C            | F | I  | U |       |
| 0    | 46           | 0 | 4  | 0 | 50    |
| 0.74 | 21           | 0 | 28 | 1 | 50    |
| 1.2  | 16           | 0 | 34 | 0 | 50    |
| 1.6  | 8            | 0 | 42 | 0 | 50    |

## Benchmark Dose Computation

Risk Response = Incidental  
Risk Type = Extra  
Specified effect = 0.01  
Confidence level = 0.9  
Time = 105  
BMD = 0.00482968  
BMDL = 0.00372838  
BMDU = 0.00600798

```

=====
Multistage Weibull Model. (Version: 1.6.1;   Date: 11/24/2009)
Solutions are obtained using donlp2  -intv, (c) by P. Spellucci
Input Data File: FMLAd2In.(d)
Tue May 02 09:56:30 2017
=====

Female Mouse Lung C+I Grouped Incidental Risk 2-stage MSW model
~~~~~

The form of the probability function is:
P[response] = 1-EXP{ -(t - t_0)^c *
                  (beta_0+beta_1*dose+beta_2*dose^2)}

The parameter betas are restricted to be positive
Dependent variable = CLASS
Independent variables = DOSE, TIME
Total number of observations = 199
Total number of records with missing values = 0
Total number of parameters in model = 5
Total number of specified parameters = 1
Degree of polynomial = 2
User specifies the following parameters:
    t_0 = 0
Maximum number of iterations = 16
Relative Function Convergence has been set to: 1e-008
Parameter Convergence has been set to: 1e-008

Default Initial Parameter Values
    c = 3.71429
    t_0 = 0 Specified
    beta_0 = 2.99856e-009
    beta_1 = 0
    beta_2 = 7.10296e-008

Asymptotic Correlation Matrix of Parameter Estimates
( *** The model parameter(s) -t_0 -beta_1
    have been estimated at a boundary point, or have been specified by the user,
    and do not appear in the correlation matrix )

    c          beta_0      beta_2
c          1          -0.99          -1
beta_0     -0.99          1          0.99
beta_2     -1          0.99          1

Parameter Estimates

Variable      Estimate      Std. Err.      95.0% Wald Confidence Interval
Lower Conf. Limit  Upper Conf. Limit
c              3.51729        0.955751        1.64405        5.39052
beta_0         7.51777e-009    3.39426e-008    -5.90086e-008    7.40441e-008
beta_1          0              NA
beta_2         1.70594e-007    7.25361e-007    -1.25109e-006    1.59228e-006

```



NA - Indicates that this parameter has hit a bound implied by some inequality constraint and thus has no standard error.

|              |                 |         |         |
|--------------|-----------------|---------|---------|
|              | Log(likelihood) | # Param | AIC     |
| Fitted Model | -82.6686        | 4       | 173.337 |

## Data Summary

## CLASS

|      | C  | F | I  | U | Total |
|------|----|---|----|---|-------|
| DOSE |    |   |    |   |       |
| 0    | 46 | 0 | 4  | 0 | 50    |
| 0.74 | 21 | 0 | 28 | 0 | 49    |
| 1.2  | 16 | 0 | 34 | 0 | 50    |
| 1.6  | 8  | 0 | 42 | 0 | 50    |

## Benchmark Dose Computation

|                  |   |            |
|------------------|---|------------|
| Risk Response    | = | Incidental |
| Risk Type        | = | Extra      |
| Specified effect | = | 0.01       |
| Confidence level | = | 0.9        |

|      |   |     |
|------|---|-----|
| Time | = | 105 |
|------|---|-----|

|     |   |           |
|-----|---|-----------|
| BMD | = | 0.0676952 |
|-----|---|-----------|

|      |   |            |
|------|---|------------|
| BMDL | = | 0.00685005 |
|------|---|------------|

|      |   |           |
|------|---|-----------|
| BMDU | = | 0.0770164 |
|------|---|-----------|

```
=====
MultistageWeibullModel. (Version: 1.6.1; Date: 11/24/2009)
Solutions are obtained using donlp2 -intv, (c) by P. Spellucci
Input Data File: FMLAd2Io.(d)
Tue May 02 09:56:48 2017
=====
```

Female Mouse Lung C+I+U Grouped Incidental Risk 2-stage MSW model

The form of the probability function is:

$$P[\text{response}] = 1 - \exp\{-(t - t_0)^c * (\beta_0 + \beta_1 * \text{dose} + \beta_2 * \text{dose}^2)\}$$

The parameter betas are restricted to be positive

Dependent variable = CLASS

Independent variables = DOSE, TIME

Total number of observations = 200

Total number of records with missing values = 0

Total number of parameters in model = 5

Total number of specified parameters = 1

Degree of polynomial = 2

User specifies the following parameters:

$$t_0 = 0$$

Maximum number of iterations = 16

Relative Function Convergence has been set to: 1e-008

Parameter Convergence has been set to: 1e-008

#### Default Initial Parameter Values

```
c      =      3.33333
t_0    =      0      Specified
beta_0 = 1.77269e-008
beta_1 =      0
beta_2 = 3.85864e-007
```

#### Asymptotic Correlation Matrix of Parameter Estimates

```
( *** The model parameter(s)  -t_0      -beta_1
```

have been estimated at a boundary point, or have been specified by the user, and do not appear in the correlation matrix )

|        | c     | beta_0 | beta_2 |
|--------|-------|--------|--------|
| c      | 1     | -0.99  | -1     |
| beta_0 | -0.99 | 1      | 0.99   |
| beta_2 | -1    | 0.99   | 1      |

## Parameter Estimates

| Variable | Estimate     | Std. Err.    | 95.0% Wald Confidence Interval |                   |
|----------|--------------|--------------|--------------------------------|-------------------|
|          |              |              | Lower Conf. Limit              | Upper Conf. Limit |
| c        | 3.53767      | 0.951903     | 1.67197                        | 5.40336           |
| beta_0   | 6.83164e-009 | 3.07193e-008 | -5.33771e-008                  | 6.70404e-008      |
| beta_1   | 0            | NA           |                                |                   |
| beta_2   | 1.55674e-007 | 6.59259e-007 | -1.13645e-006                  | 1.4478e-006       |

NA - Indicates that this parameter has hit a bound implied by some inequality constraint and thus has no standard error.

|              | Log(likelihood) | # Param | AIC     |
|--------------|-----------------|---------|---------|
| Fitted Model | -82.7393        | 4       | 173.479 |

## Data Summary

## CLASS

|      | C  | F | I  | U | Total |
|------|----|---|----|---|-------|
| DOSE |    |   |    |   |       |
| 0    | 46 | 0 | 4  | 0 | 50    |
| 0.74 | 21 | 0 | 28 | 1 | 50    |
| 1.2  | 16 | 0 | 34 | 0 | 50    |
| 1.6  | 8  | 0 | 42 | 0 | 50    |

## Benchmark Dose Computation

|                  |   |            |
|------------------|---|------------|
| Risk Response    | = | Incidental |
| Risk Type        | = | Extra      |
| Specified effect | = | 0.01       |
| Confidence level | = | 0.9        |
| Time             | = | 105        |
| BMD              | = | 0.0675827  |
| BMDL             | = | 0.00695368 |
| BMDU             | = | 0.0767564  |

```
=====
MultistageWeibull Model. (Version: 1.6.1; Date: 11/24/2009)
Solutions are obtained using donlp2 -intv, (c) by P. Spellucci
Input Data File: FMLAd3In.(d)
Tue May 02 09:57:04 2017
=====
```

Female Mouse Lung C+I Grouped Incidental Risk 3-stage MSW model

The form of the probability function is:

$$P[\text{response}] = 1 - \exp\{-(t - t_0)^c * (\beta_0 + \beta_1 * \text{dose}^1 + \beta_2 * \text{dose}^2 + \beta_3 * \text{dose}^3)\}$$

The parameter betas are restricted to be positive

Dependent variable = CLASS

Independent variables = DOSE, TIME

Total number of observations = 199

Total number of records with missing values = 0

Total number of parameters in model = 6

Total number of specified parameters = 1

Degree of polynomial = 3

User specifies the following parameters:

$t_0$  = 0

Maximum number of iterations = 16

Relative Function Convergence has been set to: 1e-008

Parameter Convergence has been set to: 1e-008

#### Default Initial Parameter Values

```

c      =      3.51351
t_0    =      0      Specified
beta_0 = 7.69524e-009
beta_1 = 8.17936e-008
beta_2 =      0
beta_3 = 8.3075e-008
```

## Asymptotic Correlation Matrix of Parameter Estimates

( \*\*\* The model parameter(s) -t\_0 -beta\_2  
have been estimated at a boundary point, or have been specified by the user,  
and do not appear in the correlation matrix )

|        | c     | beta_0 | beta_1 | beta_3 |
|--------|-------|--------|--------|--------|
| c      | 1     | -0.99  | -0.99  | -0.99  |
| beta_0 | -0.99 | 1      | 0.98   | 0.98   |
| beta_1 | -0.99 | 0.98   | 1      | 0.97   |
| beta_3 | -0.99 | 0.98   | 0.97   | 1      |

## Parameter Estimates

| Variable | Estimate     | Std. Err.    | 95.0% Wald Confidence Interval |                   |
|----------|--------------|--------------|--------------------------------|-------------------|
|          |              |              | Lower Conf. Limit              | Upper Conf. Limit |
| c        | 3.565        | 1.09332      | 1.42214                        | 5.70787           |
| beta_0   | 6.06284e-009 | 3.09921e-008 | -5.46806e-008                  | 6.68063e-008      |
| beta_1   | 6.3958e-008  | 3.37242e-007 | -5.97025e-007                  | 7.24941e-007      |
| beta_2   | 0            | NA           |                                |                   |
| beta_3   | 6.69836e-008 | 3.08585e-007 | -5.37832e-007                  | 6.718e-007        |

NA - Indicates that this parameter has hit a  
bound implied by some inequality constraint  
and thus has no standard error.

|              | Log(likelihood) | # Param | AIC     |
|--------------|-----------------|---------|---------|
| Fitted Model | -82.6066        | 5       | 175.213 |

## Data Summary

## CLASS

|      | C  | F | I  | U | Total |
|------|----|---|----|---|-------|
| DOSE |    |   |    |   |       |
| 0    | 46 | 0 | 4  | 0 | 50    |
| 0.74 | 21 | 0 | 28 | 0 | 49    |
| 1.2  | 16 | 0 | 34 | 0 | 50    |
| 1.6  | 8  | 0 | 42 | 0 | 50    |

## Benchmark Dose Computation

Risk Response = Incidental  
Risk Type = Extra  
Specified effect = 0.01  
Confidence level = 0.9

Time = 105

BMD = 0.00978798  
BMDL = 0.0052444  
BMDU > 0.0783038

```
=====
MultistageWeibullModel. (Version: 1.6.1; Date: 11/24/2009)
Solutions are obtained using donlp2 -intv, (c) by P. Spellucci
Input Data File: FMLAd3Io.(d)
Tue May 02 09:58:50 2017
=====
```

Female Mouse Lung C+I+U Grouped Incidental Risk 3-stage MSW model

The form of the probability function is:

$$P[\text{response}] = 1 - \text{EXP}\{-(t - t_0)^c * (\beta_0 + \beta_1 * \text{dose} + \beta_2 * \text{dose}^2 + \beta_3 * \text{dose}^3)\}$$

The parameter betas are restricted to be positive

Dependent variable = CLASS

Independent variables = DOSE, TIME

Total number of observations = 200

Total number of records with missing values = 0

Total number of parameters in model = 6

Total number of specified parameters = 1

Degree of polynomial = 3

User specifies the following parameters:

$$t_0 = 0$$

Maximum number of iterations = 16

Relative Function Convergence has been set to: 1e-008

Parameter Convergence has been set to: 1e-008

#### Default Initial Parameter Values

```
c      =      3.02326
t_0    =      0      Specified
beta_0 = 7.4445e-008
beta_1 = 8.31425e-007
beta_2 =      0
beta_3 = 6.42289e-007
```

Asymptotic Correlation Matrix of Parameter Estimates

( \*\*\* The model parameter(s) -t\_0 -beta\_2  
have been estimated at a boundary point, or have been specified by the user,  
and do not appear in the correlation matrix )

|        | c     | beta_0 | beta_1 | beta_3 |
|--------|-------|--------|--------|--------|
| c      | 1     | -0.99  | -0.99  | -0.99  |
| beta_0 | -0.99 | 1      | 0.98   | 0.98   |
| beta_1 | -0.99 | 0.98   | 1      | 0.97   |
| beta_3 | -0.99 | 0.98   | 0.97   | 1      |

## Parameter Estimates

| Variable | Estimate     | Std. Err.    | 95.0% Wald Confidence Interval |                   |
|----------|--------------|--------------|--------------------------------|-------------------|
|          |              |              | Lower Conf. Limit              | Upper Conf. Limit |
| c        | 3.59456      | 1.08684      | 1.4644                         | 5.72473           |
| beta_0   | 5.28712e-009 | 2.68702e-008 | -4.73775e-008                  | 5.79518e-008      |
| beta_1   | 5.52071e-008 | 2.89531e-007 | -5.12264e-007                  | 6.22678e-007      |
| beta_2   | 0            | NA           |                                |                   |
| beta_3   | 5.93591e-008 | 2.72143e-007 | -4.74031e-007                  | 5.92749e-007      |

NA - Indicates that this parameter has hit a  
bound implied by some inequality constraint  
and thus has no standard error.

|              | Log(likelihood) | # Param | AIC     |
|--------------|-----------------|---------|---------|
| Fitted Model | -82.6739        | 5       | 175.348 |

## Data Summary

## CLASS

|      | C  | F | I  | U | Total |
|------|----|---|----|---|-------|
| DOSE |    |   |    |   |       |
| 0    | 46 | 0 | 4  | 0 | 50    |
| 0.74 | 21 | 0 | 28 | 1 | 50    |
| 1.2  | 16 | 0 | 34 | 0 | 50    |
| 1.6  | 8  | 0 | 42 | 0 | 50    |

## Benchmark Dose Computation

|                  |   |            |
|------------------|---|------------|
| Risk Response    | = | Incidental |
| Risk Type        | = | Extra      |
| Specified effect | = | 0.01       |
| Confidence level | = | 0.9        |
| Time             | = | 105        |
| BMD              | = | 0.00988202 |
| BMDL             | = | 0.0052649  |
| BMDU             | > | 0.0790561  |

## **APPENDIX D ABOUT RAMBOLL ENVIRON**



## ABOUT RAMBOLL ENVIRON

A premier global consultancy, Ramboll Environ is trusted by clients to manage their most challenging environmental, health and social issues. We have earned a reputation for technical and scientific excellence, innovation and client service. Our independent science-first approach ensures that our strategic advice is objective and defensible. We apply integrated multidisciplinary services and tailor each solution to our client's specific needs and challenges.

At the end of 2014, ENVIRON joined forces with Ramboll, Northern Europe's leading engineering, design and management consultancy, to create a global practice called Ramboll Environment and Health. Together we provide an even higher level of service to our clients and address some of the most important issues facing our global community, including the environmental and health implications of urbanization, climate change and resource scarcity.

Ramboll Environ's network of experts includes more than 2,100 employees across 130 offices in 28 countries around the world. Clients will continue to benefit from our unique ability to bring clarity to issues at the intersection of science, business and policy.

## **APPENDIX E EXPERT BIOGRAPHIES**

# P ROBINAN GENTRY

## Principal/Operations Director – Gulf Coast

Dr. Robinan Gentry is a toxicologist with over 25 years of experience in toxicological issues relevant in the determination of the potential safety or risk associated with exposure to chemicals. Over her career, she has been a principal investigator or contributing author for numerous safety and risk assessments for both government and industry. She has worked as a government subcontractor in which she developed toxicological profiles for the US EPA IRIS program, ATSDR and FDA. Many assessments in which she has been involved has been to incorporate innovative quantitative approaches at that time (e.g., benchmark dose modelling, probabilistic assessments, PBPK modelling, in vitro to in vivo extrapolation, genomics data). She is a published author in the development of risk assessment methods, including Physiologically Based Pharmacokinetic (PBPK) models, and their application into both the cancer and non-cancer risk assessment process.



### EXPERIENCE HIGHLIGHTS

#### Quantitative Risk Assessments

Managed numerous human health risk assessments and projects related to the development of criteria and other health effects documents, including application of benchmark modelling; conducted detailed analyses of guidance used in the determination of acute toxicity exposure levels and comparison of USEPA's and California's Proposition 65's risk assessment methods for multiple chemicals; quantified margin of exposures and cancer slope factor using existing kinetic and mechanism of action for multiple compounds.

#### Toxicological Reviews

Prepared toxicological reviews for USEPA's Office of Pesticide Programs and Program for Toxic Substances (OPPTS), FDA's Center for Food Safety and Nutrition, the Agency of Toxic Substances and Disease Registry (ATSDR), contributing author for development of Drinking Water Criteria Documents for several radionuclides and chloroform; development of weight-of-evidence evaluations and systemic reviews for multiple chemicals including formaldehyde, methyl salicylate and arsenic.

#### Pharmacokinetics and PBPK Modelling

Served as principal investigator or co-investigator for several PBPK modelling projects, including the development of models in multiple species for constituents such as coumarin, arsenic, acrylic acid and isopropanol.

### CONTACT INFORMATION

#### P Robinan Gentry

[rgentry@ramboll.com](mailto:rgentry@ramboll.com)  
+1 (318) 3982083

Ramboll Environ  
3107 Armand Street  
Monroe, LA 71201  
United States of America

### CREDENTIALS

PhD, Toxicology, Utrecht  
University, The Netherlands

Diplomate, American Board of  
Toxicology, 2002; recertified,  
2007, 2011

MS, Pharmacology &  
Toxicology, Northeast Louisiana  
University

BS, Toxicology, Northeast  
Louisiana University

# KENNETH A MUNDT

## Principal

Dr. Kenneth Mundt is Health Sciences Practice Network Leader. He brings 30 years of experience in applying epidemiological concepts and methods to understand human health risks from environmental, occupational and consumer product exposures.

Dr. Mundt specializes in the pragmatic interpretation of epidemiological evidence in evaluating disease causation and supporting science-based regulation and decision-making.

Previously, Dr. Mundt served 11 years on the Graduate Faculty of the School of Public Health and Health Sciences, University of Massachusetts at Amherst. He received his PhD in Epidemiology at the University of North Carolina at Chapel Hill, and is a Fellow in the American College of Epidemiology.



## EXPERIENCE HIGHLIGHTS

### Epidemiological Studies

Managed multidisciplinary teams in designing, conducting and interpreting occupational epidemiological studies of workers involved in rubber, porcelain, chemical and steel industries, as well as military and other professionals.

### Health Risks Evaluation and Communication

Responded to observed and perceived health problems related to occupational, environmental and consumer product exposures.

### Teaching and Scholarship

Frequent participant in scientific meetings, training courses, and litigation proceedings. Consistent publication record.

### Scientific Regulatory Support

Provided scientific evaluation and support to various regulatory and policy processes, including oral and written comments, statistical re-analysis of data from key studies, preparation of commentaries and technical communications, identification of new research opportunities, critical review and meta-analyses of epidemiological evidence, integration of scientific evidence from diverse lines of inquiry, organize and manage expert panels and topical symposia.

### Critical Reviews and Syntheses

Comprehensively identified, systematically critically reviewed and synthesized the epidemiological literature on human health risks associated with numerous occupational, environmental and consumer product exposures.

## CONTACT INFORMATION

### Kenneth A Mundt

[kmundt@ramboll.com](mailto:kmundt@ramboll.com)  
+1 (413) 8354360

Ramboll Environ  
28 Amity Street  
Suite 2A  
Amherst, 01002  
United States of America

## CREDENTIALS

PhD, Epidemiology  
University of North Carolina

MS, Epidemiology  
University of Massachusetts

MA, English  
University of Virginia

AB, English  
Dartmouth College

# SONJA SAX

## Senior Environmental Health Scientist

Dr. Sonja Sax is an environmental health scientist with over 15 years of exposure and health risk assessment experience. She has particular expertise in airborne gases and particles, and has performed indoor and outdoor air quality investigations, managed several large environmental projects, conducted critical evaluations of toxicology and epidemiology studies, and helped prepare technical and expert reports. Sonja has authored and co-authored several publications, presented her research and consulting work at various conferences and testified before scientific panels. Sonja earned an MS and doctorate in environmental health from the Harvard T.H. Chan School of Public Health, where she also served as a postdoctoral fellow.



### EXPERIENCE HIGHLIGHTS

#### Critical Reviews and Syntheses

Conducted an extensive literature search on the toxicity and health effects of different chemical compounds including cobalt alloys found in dental materials, diesel exhaust, carbon black, welding fumes, particulate matter and sulfur dioxide.

#### Systematic Reviews

Conducted weight-of-evidence evaluation of cardiovascular and respiratory effects from exposures to ozone. Results were published in several peer-reviewed manuscripts.

#### Litigation Support

Contributed to the preparation of expert reports in litigation projects involving different chemical exposures (e.g., vinyl chloride, asbestos, carbon black, particulate matter, sulfur dioxide, and pesticides).

#### Exposure and Risk Assessment

For numerous projects prepared technical analyses on exposures and potential health effects associated with various pollutants (e.g., particulate matter, sulfur dioxide, nitrogen dioxide, arsenic, and pesticides). Exposure assessments included air dispersion modeling.

#### Regulatory Comments

Provided written and oral comments to the Clean Air Scientific Advisory Committee on exposure and health effects data and their bearing on US EPA's National Ambient Air Quality Standards for particulate matter and ozone.

#### Indoor Exposure and Risk Assessment

Conducted analyses of residential exposures to chemicals (e.g., formaldehyde from wood products, vapor intrusion of tetrachloroethylene, mercury from wallboard, and flame retardants from various indoor sources).

### CONTACT INFORMATION

#### Sonja Sax

[ssax@ramboll.com](mailto:ssax@ramboll.com)

+1 (413) 835-4358

Ramboll Environ  
28 Amity Street  
Suite 2A  
Amherst, 01002  
United States of America

### CREDENTIALS

ScD, Environmental Health Sciences  
Harvard School of Public Health

MS, Environmental Health Management  
Harvard School of Public Health

BA, Biological Chemistry  
Wellesley College

**To:** Hupp, Sydney[hupp.sydney@epa.gov]; Stanko, Joseph[jstanko@hunton.com]  
**Cc:** Dickerson, Aaron[dickerson.aaron@epa.gov]; Woodward, Cheryl[Woodward.Cheryl@epa.gov]; Jackson, Ryan[jackson.ryan@epa.gov]  
**From:** Reamy, Jeff  
**Sent:** Thur 6/1/2017 6:29:46 PM  
**Subject:** RE: 3 PM meeting Friday June 2nd

Thanks for the note and we totally understand. I will check Larry's schedule regarding Monday June 5 and let you know quickly. Conversely he may be back in DC mid-June I will look into that as well. Many thanks I know you all are very busy.

**From:** Hupp, Sydney [mailto:hupp.sydney@epa.gov]  
**Sent:** Thursday, June 01, 2017 2:20 PM  
**To:** Stanko, Joseph  
**Cc:** Dickerson, Aaron; Woodward, Cheryl; Jackson, Ryan; Reamy, Jeff  
**Subject:** [EXTERNAL]Re: 3 PM meeting Friday June 2nd

Thank you so much for sending! Unfortunately due to some very last minute changes, I don't think the Administrator will be available tomorrow afternoon. Is there any chance you all might have some availability on Monday? I'm so so sorry for the change.

Thank you!

Sent from my iPhone

On May 31, 2017, at 5:38 PM, Stanko, Joseph <jstanko@hunton.com> wrote:

Sydney:

Some final details from our end.

Attendees will be:

Larry Ziemba, Executive Vice President, Refining, Phillips 66

Accompanied by

Jeff Reamy, Vice President, Federal Affairs, Phillips 66

Any day-of information can be sent to Jeff at [Jeffrey.M.Reamy@p66.com](mailto:Jeffrey.M.Reamy@p66.com) or by cell, 202-302-4682 . Would you let Jeff know the name/number of the contact person that security should call once they are cleared in the North entrance?

Again, thank you very much for your assistance.

Regards,

Joe

<image001.jpg> **Joseph Stanko**

Partner

[jstanko@hunton.com](mailto:jstanko@hunton.com)

p 202.955.1529

[bio](#) | [vCard](#)

Hunton & Williams LLP  
2200 Pennsylvania Avenue, NW  
Washington, DC 20037

[hunton.com](http://hunton.com)

**From:** Hupp, Sydney [<mailto:hupp.sydney@epa.gov>]

**Sent:** Monday, May 22, 2017 5:25 PM

**To:** Stanko, Joseph  
**Cc:** Dickerson, Aaron; Woodward, Cheryl  
**Subject:** RE: Meeting Request

Sounds good and can do! Looping in Cheryl to provide logistics!

---

**Sydney Hupp**

Executive Scheduler

Office of the Administrator

202.816.1659 (c)

**From:** Stanko, Joseph [<mailto:jstanko@hunton.com>]  
**Sent:** Monday, May 22, 2017 5:12 PM  
**To:** Hupp, Sydney <[hupp.sydney@epa.gov](mailto:hupp.sydney@epa.gov)>  
**Cc:** Dickerson, Aaron <[dickerson.aaron@epa.gov](mailto:dickerson.aaron@epa.gov)>  
**Subject:** RE: Meeting Request

Also, would about 45 minutes be possible? Thanks again.

 **Joseph Stanko**

Partner

[jstanko@hunton.com](mailto:jstanko@hunton.com)

p 202.955.1529

[bio](#) | [vCard](#)

Hunton & Williams LLP



2200 Pennsylvania Avenue, NW  
Washington, DC 20037

[hunton.com](http://hunton.com)

**From:** Hupp, Sydney [<mailto:hupp.sydney@epa.gov>]  
**Sent:** Monday, May 22, 2017 4:26 PM  
**To:** Stanko, Joseph  
**Cc:** Dickerson, Aaron  
**Subject:** RE: Meeting Request

Around 3PM would be ideal.

---

**Sydney Hupp**

Executive Scheduler

Office of the Administrator

202.816.1659 (c)

**From:** Stanko, Joseph [<mailto:jstanko@hunton.com>]  
**Sent:** Monday, May 22, 2017 3:45 PM  
**To:** Hupp, Sydney <[hupp.sydney@epa.gov](mailto:hupp.sydney@epa.gov)>  
**Cc:** Dickerson, Aaron <[dickerson.aaron@epa.gov](mailto:dickerson.aaron@epa.gov)>  
**Subject:** RE: Meeting Request

Are there particular time windows you need to work with on the 2<sup>nd</sup>? Thanks.

Joe

<image001.jpg> **Joseph Stanko**

Partner

[jstanko@hunton.com](mailto:jstanko@hunton.com)

p 202.955.1529

[bio](#) | [vCard](#)

Hunton & Williams LLP  
2200 Pennsylvania Avenue, NW  
Washington, DC 20037

[hunton.com](http://hunton.com)

**From:** Hupp, Sydney [<mailto:hupp.sydney@epa.gov>]

**Sent:** Monday, May 22, 2017 3:33 PM

**To:** Stanko, Joseph

**Cc:** Dickerson, Aaron

**Subject:** RE: Meeting Request

Thank you!

---

**Sydney Hupp**

Executive Scheduler

Office of the Administrator

202.816.1659 (c)

**From:** Stanko, Joseph [<mailto:jstanko@hunton.com>]  
**Sent:** Monday, May 22, 2017 2:02 PM  
**To:** Hupp, Sydney <[hupp.sydney@epa.gov](mailto:hupp.sydney@epa.gov)>  
**Cc:** Dickerson, Aaron <[dickerson.aaron@epa.gov](mailto:dickerson.aaron@epa.gov)>  
**Subject:** RE: Meeting Request

Sydney:

Thanks, I know the Administrator's schedule is complicated enough, but with international travel it's an additional degree of difficulty.

I'll vet this promptly from my end and respond back.

Thanks, much appreciated.

Regards,

Joe

<image001.jpg> **Joseph Stanko**

Partner

[jstanko@hunton.com](mailto:jstanko@hunton.com)

p 202.955.1529

[bio](#) | [vCard](#)

Hunton & Williams LLP  
2200 Pennsylvania Avenue, NW  
Washington, DC 20037

[hunton.com](#)

**From:** Hupp, Sydney [<mailto:hupp.sydney@epa.gov>]  
**Sent:** Monday, May 22, 2017 1:14 PM  
**To:** Stanko, Joseph  
**Cc:** Dickerson, Aaron  
**Subject:** RE: Meeting Request

My sincere apologies for the delay Mr. Stanko, was trying to sort out his departure for international travel. Do you have any availability left on the 2<sup>nd</sup>?

Thank you!

---

**Sydney Hupp**

Executive Scheduler

Office of the Administrator

202.816.1659 (c)

**From:** Stanko, Joseph [<mailto:jstanko@hunton.com>]  
**Sent:** Friday, May 19, 2017 1:37 PM  
**To:** Hupp, Sydney <[hupp.sydney@epa.gov](mailto:hupp.sydney@epa.gov)>

**Cc:** Jackson, Ryan <[jackson.ryan@epa.gov](mailto:jackson.ryan@epa.gov)>  
**Subject:** RE: Meeting Request

Sidney:

Would it be possible for you to let me know if the June 2<sup>nd</sup> or June 5<sup>th</sup> would work for Administrator Pruitt? Mr. Ziemba is happy to work with other dates, but if the June 2<sup>nd</sup> and 5<sup>th</sup> are off the table, it will be helpful to know for other scheduling needs.

Thanks for all your assistance.

Joe

<image001.jpg> **Joseph Stanko**

Partner

[jstanko@hunton.com](mailto:jstanko@hunton.com)

p 202.955.1529

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2200 Pennsylvania Avenue, NW  
Washington, DC 20037

[hunton.com](http://hunton.com)

**From:** Stanko, Joseph  
**Sent:** Monday, May 15, 2017 5:50 PM  
**To:** 'hupp.sydney@epa.gov'  
**Cc:** Ryan Jackson (jackson.ryan@epa.gov)  
**Subject:** FW: Meeting Request

Dear Sydney:

I would like to request a meeting with the Administrator for Larry Ziemba, Executive Vice President, Refining, for Phillip 66. Larry has responsibility for the company's refining operations and serves in a leadership position with the American Fuels and Petrochemical Manufacturers Association. He has been working with other refiners and the Auto industry regarding the potential for higher octane fuels and other forward looking fuels issues. A brief bio is set forth below.

Larry is currently scheduled to be in D.C. on Friday June 2<sup>nd</sup> and Monday June 5<sup>th</sup>. If those days would not work with the Administrator's schedule, he is happy to work with other days that would be more convenient for Administrator Pruitt.

Lawrence (Larry) M. Ziemba is executive vice president, Refining, for Phillips 66, a diversified energy manufacturing and logistics company. He has 35 years of experience in the oil and gas industry. Before joining Phillips 66 in May 2012, Ziemba previously worked for ConocoPhillips as president, Global Refining, a role he took on after serving as president, U.S. Refining, since 2003. He first joined Phillips Petroleum in 2001 after its acquisition of Tosco and was in charge of handling the integration of the refining operations during the merger with Conoco. Originally from Chicago, he started his career at Unocal's Chicago refinery in 1977. In 1988, he moved to Unocal's Los Angeles corporate headquarters as manager of planning/business development for its downstream business. In 1991, he managed the acquisition of Shell's Carson refinery and subsequently integrated the asset into Los Angeles operations. In 1997, Ziemba joined Tosco as they acquired Unocal's downstream business. In 1999, he was named vice president of Tosco's three San Francisco area refineries. In 2000, he was assigned to handle the acquisition and takeover of the Wood River refinery. He has held a number of industry and community leadership positions including board positions with American Fuels and Petrochemical Manufacturers Association, WRB Refining LP and the Western States Petroleum Association. Ziemba earned a bachelor's degree in mechanical engineering from the University of Illinois-Champaign in 1977 and a Master of Business Administration degree from the University of Chicago in 1985.

Thank you for your consideration,

Joe Stanko

<image001.jpg> **Joseph Stanko**

Partner

[jstanko@hunton.com](mailto:jstanko@hunton.com)

p 202.955.1529

[bio](#) | [vCard](#)

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2200 Pennsylvania Avenue, NW  
Washington, DC 20037

[hunton.com](http://hunton.com)

**To:** Maisano, Frank[frank.maisano@bracewell.com]  
**From:** Maisano, Frank  
**Sent:** Mon 11/20/2017 6:19:13 PM  
**Subject:** Nov 20 PRG Energy Update: Giving Thanks for Energy, Climate Bonns

Friends,

Happy Thanksgiving Week!!!! So, as usual, you can expect some announcements – perhaps like the RVOs which are due at the end of the month, but always seem to find their way into pre-Thanksgiving roll out.

First off, special congrats to Ex. 6 - Personal Privacy son Ex. 6 - Personal Privacy

## Ex. 6 - Personal Privacy

Breaking this late this morning, the Nebraska Public Service Commission voted 3-2 to approve the Keystone pipeline route through the state to transport up to 830,000 barrels per day of crude from Canada's oil sands and North Dakota's shale fields to oil refineries on the Gulf Coast. It is the last key approval. Head of the Chamber's Global Energy Institute Karen Harbert said: **“the Keystone XL pipeline project has unfortunately become the poster child for the need to reform our permitting process so that we may fully realize North America's energy potential. After years of government delays, the decision as to whether to move forward with the pipeline now rests with the company that will be making the investment.”** Connect with Matt Letourneau for more at 202-463-5945.

The Bonn climate conference has ended and one of the few items that garnered attention was the Friday announcement by 19 countries and six states and provinces that they were forming an international alliance to phase out coal-fired power generation by 2030. Key nations in the alliance, such as Canada, Denmark, France, Finland, Italy, Austria, Mexico and the Netherlands, aren't using very much coal anyway. In fact, members account for less than 3% of global coal use as my friends Brad Plumer and Lisa Friedman point out in the New York Times. Notably missing in the groups are some of the world's biggest coal-consuming countries, including Germany (who got significant heat on the topic during Bonn), China, India and the United States.



Perhaps more significant on Friday in Bonn was that Sweden became the 20<sup>th</sup> country to ratify the Kigali amendment, an agreement to phase down emissions of hydrofluorocarbons (HFCs) that will allow the plan to go into effect in 2019. Given this move, we expect to see potential US action on the agreement that was forged in partnership and requires developing/developed country reductions, unlike Paris. With the world using more and more refrigerants, and heating and cooling equipment, the move is expected to hold down climate change by 0.5° C [0.9° F] by 2100. Francis Dietz (703-600-0355) at AHRI can connect you with its President Steve Yurek, who was one of the key stakeholder negotiators.

Finally from Bonn, scientists actually remain skeptical that political leaders can reduce emission increase to 1.5-degree, according to our friend Eric Roston of Bloomberg (who by the way is heading back to the policy team...Welcome Back Eric!)

Despite it being Thanksgiving week, there are a few events on the table including a NAFTA field hearing in Texas today at 10:30e/9:30c featuring Texas trade and industry leaders and the annual release of the American Coal Ash Assn's Coal Ash Production & Use Survey at the National Press Club at 9:30 tomorrow. Finally, tonight at Midnight, the first comment period for the US Trade Representatives public comment period will close. Reply comments are due November 29<sup>th</sup> and the public hearing will be on December 6<sup>th</sup>. The Energy Trade Action Coalition, a group of utilities, contractors, retailers and Conservative groups, filed comments to add their voices to the opposition. You can see the ETAC comments here.

Enjoy the week to relax, watch some football and eat some turkey and the fixins' because next week we go right back to the grind with Clean Power Plan hearings in Charleston, WV, a SAFE Oil discussion with former EIA Head Adam Sieminski and much more.... Stay tuned...Call with questions. Best,

Frank Maisano

(202) 828-5864

c. (202) 997-5932

### **THIS WEEK'S LOBBY SHOP**

The new episode of *The Lobby Shop* is live on [iTunes](#), [SoundCloud](#), and [Google Play Music](#). This week's episode features my colleagues Scott Segal and Dee Martin, *The Hill's* 2017 Top Lobbyists and explores the world of Washington lobbying, what it takes to be an effective lobbyist, and how they got into the field. Remember our address for listeners to reach out with topic suggestions, feedback, etc. – [thelobbyshop@policyres.com](mailto:thelobbyshop@policyres.com).

## **FRANKLY SPOKEN**

*“There are many examples of a country switching from being a net energy exporter to a net importer: it is very rare to see the opposite, especially when the country in question is one of the world's largest importers of oil. Yet this is precisely what is happening as a result of the U.S. shale revolution -- both for oil and for natural gas. A remarkable ability to unlock new resources cost-effectively pushes combined United States oil and gas output to a level 50% higher than any other country has ever managed. ”*

*The International Energy Agency (IEA) in its World Energy Outlook.*

*“We would need an incredibly dramatic reduction in emissions in the very near future. The 1.5-degree target is a little ridiculous and implausible.”*

*Zeke Hausfather, a climate scientist with [Berkeley Earth](#) in a Bloomberg story on climate change and science.*

## **IN THE NEWS**

**House Passes Tax Legislation** – The House passed a bill to significantly change taxation, including \$1.5 trillion in cuts for individuals and companies. The overhaul, backed by President Trump, heads to the Senate, which is developing a bill that has major differences from the House measure. My colleague Liam Donovan has been in the nitty-gritty details – as well as the politics of it all – and can answer all your questions. [Liam.donovan@bracewell.com](mailto:Liam.donovan@bracewell.com) or (202-828-5847)

**Wind Urges Senate to Stand Firm on PTC Deal** – Tom Kiernan, CEO of the American Wind Energy Association (AWEA) said the House missed an opportunity to stand up for 60,000 American workers and preserve \$50 billion in private infrastructure investment. The tax reform bill passed by the House retroactively changes how businesses can qualify for wind energy's primary investment tools, the wind energy Production Tax Credit (PTC) and Investment Tax Credit (ITC), which are already on a path to phase out by 2019. The House bill undermines wind development by implementing a retroactive change to qualification rules for wind energy tax credits. Because businesses can't go back in time to requalify for the credits after ordering wind turbines and inking construction contracts, tens of thousands of jobs and billions of dollars of investment could be lost, and new business has stalled. The House bill would also terminate an inflation adjustment, significantly cutting the value of the PTC. The Senate tax proposal that passed the Finance committee last night does not retroactively alter the wind energy PTC or ITC, leaving in place the phase out terms set in the bi-partisan PATH Act of 2015, keeping American workers on the job.

**AHRI Weighs In** – The Air-Conditioning, Heating, and Refrigeration Institute (AHRI), the trade association representing HVACR and water heating manufacturers, applauded House tax package passage. "Our member manufacturers strongly support Congress's efforts to simplify the tax code and reduce rates," said AHRI President & CEO Stephen Yurek. "AHRI applauds the inclusion in H.R. 1 of full and immediate expensing, a permanent reduction in the corporate rate to 20 percent rate, a reduced rate for pass-through entities, repeal of the estate tax, and extension of the tax credit for geothermal HVAC equipment – all of which will serve to make the U.S. a more competitive place to do business," he added. AHRI believes these provisions are all crucial to the continued growth of manufacturing in the United States, and we urge the Senate to follow the lead of the House to enact substantive reforms that will allow our industry and others to continue to innovate and create jobs.

**Chamber, Partners Launch Gas Export Infrastructure Initiative** – The Chamber's Global Energy Institute hosted the U.S. Trade Development Authority (USTDA), LNG Allies and others at U.S. Chamber Headquarters for the launch of the U.S. Gas Infrastructure Exports Initiative Friday. The goal of the initiative is to connect American companies to new export opportunities, with a particular focus on emerging economies. USTDA acting director Thomas Hardy focused on the goal of using American technology and innovation to advance gas infrastructure in partner countries, while providing new opportunities for U.S. companies. As part of the Initiative, USTDA announced a call for gas-related project proposals for U.S. companies that have identified project sponsors in high growth emerging markets. The Agency will be conducting gas sector reverse trade missions to bring prospective LNG buyers to the U.S. for site visits and meetings. Delegates from Senegal, China and others are already slated to participate. GEI is a natural partner for the Exports Initiative. We are strong advocates for policies and activities that

strengthen America's global energy leadership, which is good for both our economy and for global security. The continued export of American natural gas creates opportunities at home and contributes to stability abroad. For more information on the Initiative, visit [www.ustda.gov/program/us-gas-infrastructure-exports-initiative](http://www.ustda.gov/program/us-gas-infrastructure-exports-initiative)

**IEA Says Shale Gas Boom Will Last** – The International Energy Agency says the shale gas boom has positioned the US to become the world's largest exporter of liquefied natural gas by the middle of the next decade in its 2017 World Energy Outlook. By the late 2020s, the U.S. -- which only lifted its ban on oil exports in 2015 -- will ship more oil to foreign markets than it imports. IEA predicts that US shale oil producers will boost their output by 8 million barrels a day between 2010 and 2025, an increase that "would match the highest sustained period of oil output growth by a single country in the history of oil markets" -- rivaling even the massive increase posted by Saudi Arabia between 1966 and 1981. The expected U.S. surge will account for 80% of the increase in global supply over the time period.

**Powell in WSJ Debate: Nuclear is Essential** – ClearPath Executive Director Rich Powell argued this week in the *Wall Street Journal* that the future of U.S. nuclear power is not only bright— it's non-negotiable. A robust civilian nuclear sector is mandatory for the U.S. to remain a major geopolitical, economic, military and environmental leader, Rich wrote. After decades of policy neglect, Washington is finally addressing what is both a national and global necessity and a tremendous opportunity. That includes growing bipartisan support to reform new reactor licensing and improve tax incentives for new nuclear facilities, led in Congress by clean-energy advocates as well as national-security and energy-reliability hawks.

**Henkel, Novozymes, P&G, Sasol Execs Named to ACI Board of Directors** – Four executives from leading companies across the cleaning product supply chain were elected to the American Cleaning Institute (ACI) Board of Directors: Mike Clark, Vice President, Organics – Sasol Performance Chemicals; Charles Crawford, Ph.D., Head of R&D, Laundry and Home Care, North America – Henkel Consumer Goods Inc.; Rene Garza, Vice President, Household Care, Americas – Novozymes and Sundar Raman, Vice President, North America Fabric Care – Procter & Gamble. At its meeting in Washington, D.C., the ACI Board elected the new Directors to fill existing vacancies.

## **ON THE SCHEDULE THIS WEEK**

**USTR Comment Deadline on Solar Trade Case** – November 20<sup>th</sup>

**USEA Forum to Look at Carbon IRA** – The US Energy Assn will held a forum today at 10:00 a.m. focused on a new idea that rewards reductions in Carbon footprint with funds deposited into a retirement account. Guest Speaker, Jason Makansi, President of consulting firm Pearl Street, will introduce the concept, describe the four broad steps required and provide simple examples of how to implement the concept.

**Forum to Look at Puerto Power Situation** – Power 4 Puerto Rico will held a briefing today at 10:00 a.m. at the National Press Club's Zenger Room to discuss the ongoing effort to restore power on the hurricane-ravaged island.

**Senate Finance to Hold NAFTA Field Hearing** – The Senate Finance Committee holds a field hearing today at 9:30 a.m. Central Time in San Antonio at the Marriott Plaza Hotel's Cavalier Room looking at modernization of the North American Free Trade Agreement (NAFTA). Witnesses will include USTR's Stephen Vaughn, Auto Alliance head Mitch Bainwol, Paola Avila of The Border Trade Alliance, San Antonio Chamber of Commerce CEO Richard Perez, Texas Association of Business head Jeff Moseley, Texas Farm Bureau President Russell Boening and Todd Staples of the Texas Oil and Gas Association.

**WRI to Host Forum on Energy Access** – The World Resources Institute will hold a forum today at Noon on how energy access for all benefits the economy and the environment. Michael Westphal will present his paper on energy access - another chapter of the "World Resources Report: Towards a More Equal City." Millions of residents in some of the fastest growing cities in the world don't have access to clean, reliable energy, and the challenge of reaching them is not getting easier. In 2012, only 58 percent of the urban population had access to electricity in low-income countries, and nearly 500 million urban residents worldwide used dirty and harmful cooking fuels like charcoal and wood.

**Coal Ash Annual Production and Use Survey Results** – Tomorrow at 9:30 a.m. at the National Press Club, the American Coal Ash Association will release its annual Coal Ash Production & Use Survey results. Conducted since the early 1960s, the survey provides the most complete data available on the volume of coal ash materials that are produced and beneficially used in a variety of applications. ACAA officials will also discuss impacts of environmental regulation and changing electric utility markets on coal ash production and use. Tom Adams and John Ward of ACCA roll out the report.

**THANKSGIVING** – November 26<sup>th</sup>

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## **IN THE FUTURE**

**EPA to Hold CPP Public Hearing in WV** – EPA will hold a public hearing regarding the withdrawal of the Clean Power Plan in West Virginia on Nov. 28<sup>th</sup> and 29<sup>th</sup>. EPA said it will convene two daylong sessions at the state capitol in Charleston. The agency said it "may also hold an additional hearing to be announced at a later date." EPA also extended the comment period on the proposal to Jan. 16, 2018.

**CCS Report to be Released** – The Global CCS Institute will release its annual *Global Status of CCS: 2017* report launch on November 28<sup>th</sup> at 9:30 a.m. This year, the Institute is partnering with one of the top think tanks in the city, the [Center for Strategic and International Studies](#), to promote and discuss the release of the Institute's signature report, the globally recognized annual guide to the current progress and prospects for carbon capture and storage. Speakers will include Global CCS's Jeff Erikson and IEA's Samantha McCulloch.

**Forum to Look at Asia-Pacific Security** – The Center for Climate and Security (CCS) [hosts a high-level discussion](#) on the security risks of climate change in the Asia-Pacific on Tuesday November 28<sup>th</sup> at 10:00 a.m. This discussion will explore these risks, how US military installations, operations, and strategies in the region may be shaped by them, and their influence on US bilateral and multilateral relationships.

**Tillerson to Speak at Wilson Center** – The Wilson Center will host [US Secretary of State Rex Tillerson](#) next Tuesday, November 28<sup>th</sup> at 11:00 a.m. for an address on the future of U.S. relations with Europe by Secretary of State Rex Tillerson, followed by a conversation with Wilson Center President and CEO Jane Harman.

**Heritage Hosts Climate Discussion** – The Heritage Foundation hosts a [discussion](#) next Tuesday at Noon on the long history and politics of climate activism. Speaker Rupert Darwell will address the topic



**CSIS to Release New Energy Report** – The CSIS Energy & National Security Program will hold a presentation of its latest report, *Energy and Development: Providing Access and Growth* on Next Tuesday at 1:30 p.m. Based on findings from several workshops conducted by CSIS over the last two years, *Energy and Development* explores several of the most important shifts underpinning the energy access issue. By exploring the role of emerging economies as the primary drivers of future energy demand, the influence of sustainability and climate change concerns in crafting development strategies, and changes to how energy access and growth are measured, the report provides a unique survey of energy and economic growth in the developing world. Sarah Ladislaw (CSIS) will present the report, followed by a panel discussion with Morgan Bazilian (World Bank; CSIS), Morgan Landy (International Finance Corporation), and Philippe Benoit (GIAS2050; CSIS). CSIS's Erol Yayboke, co-author of the report, will moderate.

**Forum on Tax Reform to Discuss Carbon Tax** – The Brookings Institute will hold a forum on Tuesday November 28<sup>th</sup> at 2:00 p.m. regarding tax reform that will discuss a possible carbon tax. The Urban-Brookings Tax Policy Center, the Cross Brookings Initiative on Energy and Climate, congressional leaders, and top experts for a discussion on the prospects for tax reform and the potential to include a carbon tax in a broader bipartisan bill. The event will feature a keynote address by Rep. John Larson and panelists include Niskanen's Jerry Taylor and our friend Amy Harder of Axios.

**SAFE Event to Feature Oil Discussion with Former EIA Head** – Securing America's Future Energy (SAFE) will host a panel discussion on next Tuesday, November 28<sup>th</sup> at 4:30 p.m. at the National Union Building exploring how market uncertainty, underinvestment, geopolitical risk, OPEC intervention, rising global demand, and other market forces undermine oil market stability. The panel will discuss the likelihood of a return to high and volatile oil prices, implications for American economic and national security, and domestic policy solutions. Moderated by our friend Ben Geman of Axios, the panel will feature former EIA Administrator Adam Sieminski – now at CSIS – and Jonathan Chanis, SAFE's Senior Vice President of Policy.

**USTR Reply Comments Deadline** – November 29<sup>th</sup>

**National Academies Review Climate Assessment** – On Wednesday afternoon, the National Academies will review the 4<sup>th</sup> draft of the National Climate Assessment in an open meeting at the NAS building.

**NYT to host Climate Summit** – On November 29<sup>th</sup> and 30<sup>th</sup> in San Francisco at the Metreon, *The New York Times* will hold ClimateTECH, a groundbreaking summit that brings together influential leaders from key industries to assess bold, cutting-edge technologies that could help keep global warming below the two-degree threshold. Hosted by top Times journalists, ClimateTECH's focus on innovation will also encompass the dramatic changes downstream (in finance, policy, consumer behavior, infrastructure) that are vital for these new technologies to gain adoption and succeed. The program will feature on-stage interviews with celebrated entrepreneurs and inventors along with policy makers, economists and subject-matter experts. Designed for an audience of decision-makers, ClimateTECH will also include an early-stage technology showcase of the newest innovations, along with other experiential activities. The Speaker list is long, but it includes California Gov. Jerry Brown, Statoil's Irene Rummelhoff, Chicago Mayor Rahm Emanuel, Tom Steyer and many others.

**Solar Festival Set for Austin** – The 2<sup>nd</sup> annual Solar Business Festival will be held on November 29<sup>th</sup> and 30<sup>th</sup> in Austin, Texas at the Thompson Conference Center. The two-day conference segment features a wide variety of sessions on, components of doing a solar and storage business in Texas, microgrids and energy storage, distributed grid, project financing, sustainable buildings, smart grids, solar initiatives and innovations, utility integration, community solar projects, policies, incentives and goals, market growth opportunities, regulatory framework, international solar market opportunities/challenges, sustainable farming and more.

**CSIS Look at Zero-Emissions Fuels** – The CSIS Energy and National Security Program is hosting a forum on Thursday November 30<sup>th</sup> at 8:00 a.m. on hydrogen, green shipping and zero-emission fuel in the maritime sector. The discussion will center on the development and implementation of hydrogen fuel technology, the important role it could play for shipping in the transition to a low-carbon future, and ongoing U.S.-Norwegian cooperation in the area. Shipping accounts for more than 2% of worldwide greenhouse gas emissions today and is set to increase up to 17% by 2050. This session will explore the concrete cooperation and projects being pursued in Norway and the United States. Norwegian Ambassador Kåre R. Aas will give introductory remarks, followed by a discussion with Elisabet Bøe (Sogn og Fjordane), Joseph Pratt (Sandia National Lab), Lars Endre Gimmetstad (Brodrene Aa), and Martin Grimnes (Arcadia Alliance) on the present and future of hydrogen technology and what a low-carbon future for maritime transport may look like.

**Forum to Look at Energy Crossroads** – The Texas Public Policy Foundation and The Heritage Foundation host the "At the Crossroads IV: Energy and Climate Policy Summit" on Thursday. The conversation will feature the world's leading scientists, policymakers, entrepreneurs, and energy experts, who will gather to explore this turning point in energy history and the long-lasting potential it holds for America and beyond. Speakers include Sens. Jim Inhofe, Mike Lee, House Science Chair Lamar Smith and many others.



**RFS RVO Deadline** – November 30<sup>th</sup>

**Chatterjee to Address NatGas Roundtable** – On Thursday at Noon, the Natural Gas Roundtable will host FERC Chairman Neil Chatterjee as the guest speaker at the next luncheon.

**R Street Hosts Clean Energy Event on Capitol Hill** – R Street hosts a forum on Thursday, November 30<sup>th</sup> in 122 Cannon featuring a discussion on clean energy with panelists from Microsoft, Advanced Energy Economy (AEE), the American Coalition of Competitive Energy Suppliers (ACCES) and Citizens for Responsible Energy Solutions. Across the country, clean energy is growing rapidly in states that allow customers to choose their electricity supplier. This system of 'retail choice' grants customers more options and allows them to generate their own energy on-site. Importantly, large corporations have been leading the charge for distributed energy generation, marking a refreshing intersection of conservative and green agendas.

**RFF to Look at Energy Security** – Resources for the Future (RFF) will host a forum on Thursday November 30<sup>th</sup> focused on the new realities on energy security given our shale resources. This RFF seminar will open with a presentation from former Department of Energy official Howard Gruenspecht on the economic and political factors that have led to a very different oil security picture than the country faced decades ago. RFF President Richard Newell will present new research on how the shale oil boom has altered the flexibility of the US supply, as well as how price and inventory dynamics can inform Strategic Petroleum Reserve policy. RFF University Fellow Stephen Brown will then discuss an RFF project that produced new estimates for the value of the oil security premium—a key metric used in benefit–cost analyses of related regulations. RFF Senior Fellow Alan Krupnick will wrap up with a discussion of the new energy security paradigm, which broadens the definition of US energy security beyond oil to include natural gas, electricity, and other energy systems.

**Clean Edge, GridWise Alliance Host gridCONNEXT** – GridWise Alliance and Clean Edge will host gridCONNEXT on December 4<sup>th</sup> through 6<sup>th</sup> in Washington, D.C. with hundreds of regulators, utility executives, corporations, and other industry stakeholders to explore the many grid modernization.

**Solar Tariff Opponents to Weigh-in at Press Club** – Opponents of tariffs on solar imports will

hold a briefing on Tuesday December 5<sup>th</sup> at 9:30 a.m. at the National Press Club. The event will feature solar industry advocates, as well as members of the Energy Trade Action Coalition like the National Electrical Contractors Association, utilities, retailers and Conservative free-trade groups. More next week.

**USTR Hearing on Solar Trade Tariff – December 6<sup>th</sup>**

**Pruitt to Head to House Energy Panel** – The House Energy and Commerce Environment Subcommittee will hold a hearing on December 7<sup>th</sup> with EPA Administrator Scott Pruitt testifying. The appearance will be Pruitt's first before the Energy and Commerce Committee.

**IPAA Exec to Address Energy Economists** – The National Capital Area members of the US Assn of Energy Economist will host Fred Lawrence for their December 8<sup>th</sup> lunch. Lawrence, VP at the Independent Petroleum Association of America, will discuss the outlook for U.S. oil and natural gas, including shale export trends over the past two years, focus on the Independents in a Sector and demand and geopolitical reality vs. ideology.

**Paris Forum to Focus on Anniversary** – Forum to French President Macron will host the One Planet Summit on December 12 in Paris, on the two-year anniversary of the Paris Agreement. The Summit will focus specifically on climate finance. Heads of State will be invited to attend this meeting.

***The Last Jedi Hits Theaters* – DECEMBER 15<sup>th</sup>**

**Pruitt to Head to Senate Environment** – The Senate Environment and Public Works Committee said EPA Administrator Scott Pruitt will appear before the Committee on Jan. 31, 2018, making his first return to the panel nearly a year after his confirmation.



**To:** Davis, Patrick[davis.patrick@epa.gov]  
**Cc:** Jackson, Ryan[jackson.ryan@epa.gov]; Brown, Byron[brown.byron@epa.gov]  
**From:** DeLaquil, Mark  
**Sent:** Wed 6/21/2017 12:02:58 AM  
**Subject:** Re: CERCLA Financial Responsibility Proposal

3 pm on July 25 works as well. Thank you.

Sent from my iPad

On Jun 20, 2017, at 6:41 PM, Davis, Patrick <davis.patrick@epa.gov> wrote:

Hi Mark,

How about 3 p.m. on July 25?

Thanks,

Patrick Davis

Environmental Protection Agency

Deputy Assistant Administrator, Office of Land and Emergency Management

202-564-3103 office

202-380-8341 cell

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**Cc:** Brown, Byron <brown.byron@epa.gov>  
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Dear Patrick,

Thanks for the response. How does 2:00 pm EDT on July 25 work? If not, is there another time that afternoon that would work? Thanks also for the note about the comment period --- Asarco will be submitting comments by that date as well.

Best regards,

Mark

**Mark DeLaquil**  
Partner

<image001.jpg>  
Washington Square  
1050 Connecticut Ave, N.W. | Suite 1100  
Washington, DC 20036-5304  
T +1.202.861.1527

[mdelaquil@bakerlaw.com](mailto:mdelaquil@bakerlaw.com)  
[bakerlaw.com](http://bakerlaw.com)

<image002.jpg><image003.jpg>

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Hi Mark,

I am DC on July 25, 26 and 28 and could meet with you. FYI, the comment period for the CERCLA 108 (b) rule making closes on July 11.

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Thank you, Ryan, and good to see you as well. I will be in touch later this week to see if we can firm up a specific date.

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I'm sorry yes any of us can meet with you on this. Good to see you the other day.

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Ryan Jackson

Chief of Staff

U.S. EPA

Ex. 6 - Personal Privacy

On Jun 15, 2017, at 1:07 PM, DeLaquil, Mark <[mdelaquil@bakerlaw.com](mailto:mdelaquil@bakerlaw.com)> wrote:

Dear Ryan,

I hope all is well. I am reaching out concerning EPA's CERCLA financial responsibility proposal. I represent Asarco LLC, which will be filing comments on the proposal. Asarco would also appreciate the opportunity to discuss its concerns with you or another appropriate EPA official.

Duane Yantorno, Asarco's Corporate Manager for State and Federal Regulatory Affairs, will be in Washington from Arizona in late July so I am hoping to schedule the meeting for either July 25, the morning of July 26, or July 28.

Please let me know if any of those dates work schedule-wise. If not, I can propose alternative dates. Also, if there is any other information I can provide to assist, please let me know.

One last note so that you are fully informed, in February I raised the possibility of a meeting with Kevin Minoli. We tabled the issue at that time due to the extension of the comment period.

Best regards,

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Mark

**Mark DeLaquil**  
Partner

<image002.jpg>

Washington Square  
1050 Connecticut Ave, N.W. | Suite 1100  
Washington, DC 20036-5304  
T +1.202.861.1527

[mdelaquil@bakerlaw.com](mailto:mdelaquil@bakerlaw.com)  
[bakerlaw.com](http://bakerlaw.com)

<image004.jpg><image006.jpg>

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**To:** DeLaquil, Mark[mdelaquil@bakerlaw.com]; Davis, Patrick[davis.patrick@epa.gov]; Jackson, Ryan[jackson.ryan@epa.gov]  
**From:** Brown, Byron  
**Sent:** Tue 6/20/2017 9:43:59 PM  
**Subject:** RE: CERCLA Financial Responsibility Proposal

I am free then. – Byron

Byron R. Brown

Deputy Chief of Staff for Policy

Office of the Administrator

U.S. Environmental Protection Agency

**From:** DeLaquil, Mark [mailto:mdelaquil@bakerlaw.com]  
**Sent:** Tuesday, June 20, 2017 2:50 PM  
**To:** Davis, Patrick <davis.patrick@epa.gov>; Jackson, Ryan <jackson.ryan@epa.gov>  
**Cc:** Brown, Byron <brown.byron@epa.gov>  
**Subject:** RE: CERCLA Financial Responsibility Proposal

Dear Patrick,

Thanks for the response. How does 2:00 pm EDT on July 25 work? If not, is there another time that afternoon that would work? Thanks also for the note about the comment period --- Asarco will be submitting comments by that date as well.

Best regards,



Mark

**Mark DeLaquil**  
Partner

**BakerHostetler**

Washington Square  
1050 Connecticut Ave, N.W. | Suite 1100  
Washington, DC 20036-5304  
T +1.202.861.1527

[mdelaquil@bakerlaw.com](mailto:mdelaquil@bakerlaw.com)

[bakerlaw.com](http://bakerlaw.com)



**From:** Davis, Patrick [<mailto:davis.patrick@epa.gov>]  
**Sent:** Monday, June 19, 2017 5:11 PM  
**To:** DeLaquil, Mark; Jackson, Ryan  
**Cc:** Brown, Byron  
**Subject:** RE: CERCLA Financial Responsibility Proposal

Hi Mark,

I am DC on July 25, 26 and 28 and could meet with you. FYI, the comment period for the CERCLA 108 (b) rule making closes on July 11.

Thanks,

Patrick Davis

Environmental Protection Agency

Deputy Assistant Administrator, Office of Land and Emergency Management

202-564-3103 office

202-380-8341 cell

Information sent to this email address may be subject to FOIA.

**From:** DeLaquil, Mark [<mailto:mdelaquil@bakerlaw.com>]  
**Sent:** Monday, June 19, 2017 4:46 PM  
**To:** Jackson, Ryan <[jackson.ryan@epa.gov](mailto:jackson.ryan@epa.gov)>  
**Cc:** Brown, Byron <[brown.byron@epa.gov](mailto:brown.byron@epa.gov)>; Davis, Patrick <[davis.patrick@epa.gov](mailto:davis.patrick@epa.gov)>  
**Subject:** RE: CERCLA Financial Responsibility Proposal

Thank you, Ryan, and good to see you as well. I will be in touch later this week to see if we can firm up a specific date.

**From:** Jackson, Ryan [<mailto:jackson.ryan@epa.gov>]  
**Sent:** Monday, June 19, 2017 1:35 PM  
**To:** DeLaquil, Mark  
**Cc:** Brown, Byron; Davis, Patrick  
**Subject:** Re: CERCLA Financial Responsibility Proposal

I'm sorry yes any of us can meet with you on this. Good to see you the other day.

---

Ryan Jackson

Chief of Staff

U.S. EPA

Ex. 6 - Personal Privacy

On Jun 15, 2017, at 1:07 PM, DeLaquil, Mark <[mdelaquil@bakerlaw.com](mailto:mdelaquil@bakerlaw.com)> wrote:

Dear Ryan,

I hope all is well. I am reaching out concerning EPA's CERCLA financial responsibility proposal. I represent Asarco LLC, which will be filing comments on the proposal. Asarco would also appreciate the opportunity to discuss its concerns with you or another appropriate EPA official.

Duane Yantorno, Asarco's Corporate Manager for State and Federal Regulatory Affairs, will be in Washington from Arizona in late July so I am hoping to schedule the meeting for either July 25, the morning of July 26, or July 28.

Please let me know if any of those dates work schedule-wise. If not, I can propose alternative dates. Also, if there is any other information I can provide to assist, please let me know.

One last note so that you are fully informed, in February I raised the possibility of a meeting with Kevin Minoli. We tabled the issue at that time due to the extension of the comment period.

Best regards,

Mark

**Mark DeLaquil**  
Partner

<image002.jpg>

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BakerHostetler







**To:** wwehrum@hunton.com[wwehrum@hunton.com]  
**From:** Jackson, Ryan  
**Sent:** Mon 4/17/2017 9:35:27 PM  
**Subject:** Re:

Let me give you a call right back.

Ryan Jackson  
Chief of Staff  
U.S. EPA

Ex. 6 - Personal Privacy

> On Apr 17, 2017, at 5:28 PM, Jackson, Ryan <jackson.ryan@epa.gov> wrote:

>

> I'm sorry for the delay, do you have an opportunity to talk tonight?

>

> Ryan Jackson

> Chief of Staff

> U.S. EPA

>

Ex. 6 - Personal Privacy

**To:** wwehrum@hunton.com[wwehrum@hunton.com]  
**From:** Jackson, Ryan  
**Sent:** Mon 4/17/2017 9:28:14 PM

I'm sorry for the delay, do you have an opportunity to talk tonight?

Ryan Jackson  
Chief of Staff  
U.S. EPA

Ex. 6 - Personal Privacy

**To:** DeLaquil, Mark[mdelaquil@bakerlaw.com]  
**Cc:** Brown, Byron[brown.byron@epa.gov]; Davis, Patrick[davis.patrick@epa.gov]  
**From:** Jackson, Ryan  
**Sent:** Mon 6/19/2017 5:35:26 PM  
**Subject:** Re: CERCLA Financial Responsibility Proposal

I'm sorry yes any of us can meet with you on this. Good to see you the other day.

---

Ryan Jackson  
Chief of Staff  
U.S. EPA

**Ex. 6 - Personal Privacy**

On Jun 15, 2017, at 1:07 PM, DeLaquil, Mark <[mdelaquil@bakerlaw.com](mailto:mdelaquil@bakerlaw.com)> wrote:

Dear Ryan,

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Duane Yantorno, Asarco's Corporate Manager for State and Federal Regulatory Affairs, will be in Washington from Arizona in late July so I am hoping to schedule the meeting for either July 25, the morning of July 26, or July 28.

Please let me know if any of those dates work schedule-wise. If not, I can propose alternative dates. Also, if there is any other information I can provide to assist, please let me know.

One last note so that you are fully informed, in February I raised the possibility of a meeting with Kevin Minoli. We tabled the issue at that time due to the extension of the comment period.

Best regards,

Mark

**Mark DeLaquil**  
Partner

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[bakerlaw.com](http://bakerlaw.com)

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**To:** Krenik, Edward[Edward.Krenik@bracewelllaw.com]  
**From:** Jackson, Ryan  
**Sent:** Mon 3/27/2017 1:10:21 AM  
**Subject:** Re: Congrats, Ed Krenik, & Deputy Director of Intergovernmental Affairs

Good deal. Whenever you would like. Knowing you get me credibility chits here.

Ryan Jackson  
Chief of Staff  
U.S. EPA

Ex. 6 - Personal Privacy

On Mar 26, 2017, at 8:43 PM, Krenik, Edward <Edward.Krenik@bracewelllaw.com> wrote:

Ryan,

Christine would be a good addition to your team. I would put her as the Deputy for State affairs under OCIR.

Often a difficult position to fill. I think she would be good. You should meet her. Her enthusiasm is a lot and her brother is a state legislator.

BTW, need to come in to see you about an emissions standard. What works for you?

Ed

Sent from my Verizon, Samsung Galaxy smartphone

---

**EDWARD KRENIK**

Partner

[Edward.Krenik@policyres.com](mailto:Edward.Krenik@policyres.com)

T: +1.202.828.5877 | F: +1.800.404.3970

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----- Original message -----

From: "Jackson, Ryan" <[jackson.ryan@epa.gov](mailto:jackson.ryan@epa.gov)>

Date: 3/26/17 5:28 PM (GMT-05:00)

To: "Krenik, Edward" <[Edward.Krenik@bracewelllaw.com](mailto:Edward.Krenik@bracewelllaw.com)>

Subject: FW: Congrats, Ed Krenik, & Deputy Director of Intergovernmental Affairs

Can I get a reference?

**From:** [pierson@presencestrategies.com](mailto:pierson@presencestrategies.com) [<mailto:pierson@presencestrategies.com>]

**Sent:** Friday, March 3, 2017 8:21 PM

**To:** Jackson, Ryan <[jackson.ryan@epa.gov](mailto:jackson.ryan@epa.gov)>

**Subject:** Congrats, Ed Krenik, & Deputy Director of Intergovernmental Affairs

Dear Mr. Jackson,

Congratulations on being named EPA Chief of Staff. Since I am interested in the position of EPA Deputy Director of Intergovernmental Affairs, my former colleague, Ed Krenik, encouraged me to contact you. I am in D.C. Monday, March 6 and Tuesday, March 7 and wonder if you would have time to meet and discuss how I might help you and the Trump team.

Attached is my resume. Within the electric power industry, I have worked in 5 Midwest states and with many municipal governments. I also have extensive experience in Minnesota Government in the House, Senate, and Governor's Office, as well as a brief stint in the MN Pollution Control Agency. In addition, I worked for a few years with motor vehicle administrators in 25 states and worked for a U.S. Senator. I understand the inner workings of all levels of government and enjoy establishing mutually beneficial relationships.

Thank you for your attention. It would be an honor to meet and speak with you. Be assured that as a member of the Administration, I would work faithfully to advance policies and plans consistent with President Trump's agenda.

Sincerely,

Christina Pierson

612-594-6621



**To:** Wehrum, William L.[[wwehrum@hunton.com](mailto:wwehrum@hunton.com)]  
**From:** Jackson, Ryan  
**Sent:** Fri 6/2/2017 11:39:33 PM  
**Subject:** RE: Checking In

Great news and big thanks. Looking forward to it. I think Pruitt would appreciate another sit down in the near future on next steps like you did before. Thanks.

**From:** Wehrum, William L. [<mailto:wwehrum@hunton.com>]  
**Sent:** Friday, June 2, 2017 6:28 PM  
**To:** Jackson, Ryan <[jackson.ryan@epa.gov](mailto:jackson.ryan@epa.gov)>  
**Subject:** Checking In

Ryan – Wanted to let you know that I completed and submitted the last of my forms this afternoon. OPP should have everything they need to move this along.

**HUNTON & WILLIAMS** Bill Wehrum

Partner

[wwehrum@hunton.com](mailto:wwehrum@hunton.com)  
p 202.955.1637

[bio](#) | [vCard](#) | [blog](#) | [LinkedIn](#)

Hunton & Williams LLP  
2200 Pennsylvania Avenue, NW  
Washington, DC 20037

[hunton.com](http://hunton.com)



**To:** Segal, Scott[[Scott.Segal@bracewelllaw.com](mailto:Scott.Segal@bracewelllaw.com)]  
**From:** Jackson, Ryan  
**Sent:** Wed 4/5/2017 10:50:06 AM  
**Subject:** Re: HVAC Industry

Yeah. Do we have an invite in on this?

Ryan Jackson  
Chief of Staff  
U.S. EPA

Ex. 6 - Personal Privacy

On Apr 4, 2017, at 5:06 PM, Segal, Scott <[Scott.Segal@bracewelllaw.com](mailto:Scott.Segal@bracewelllaw.com)> wrote:

Ryan – trying to see if there is any chance that the Boss might want to address the HVAC industry out in Reston on May 1. The HVAC industry has extensive interaction with EPA on everything from refrigerants to manufacturing issues to efficiency. It's a large industry in the US, with most of their appliances actually manufactured in the US (with a particularly heavy presence in our respective TX and OK). I wonder if the Boss might be willing to come out to Reston and sound some themes related to regulatory reform (really their key issue). If he can't do it, I can think of others that might be great from the Agency. And I guarantee a friendly audience! Let me know what you think either way. Appreciate your attention to this, ss/

---

**SCOTT SEGAL**

Partner

[Scott.Segal@policyres.com](mailto:Scott.Segal@policyres.com)

T: +1.202.828.5845 | F: +1.800.404.3970

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<Pruitt Invite Letter.docx>

**Cc:** Hupp, Sydney[hupp.sydney@epa.gov]  
**To:** wwehrum@hunton.com[wwehrum@hunton.com]  
**From:** Jackson, Ryan  
**Sent:** Tue 4/4/2017 10:56:55 PM  
**Subject:** Mtg with Administrator

Bill, I have to be out of town thurs and fri but I would like you and the Administrator to speak this week on the topics we discussed. Because I'll be out Mandy and Byron will accompany Pruitt in the meeting. I've CC'd Syd our scheduler on this to see when would be a convenient time for an hour meeting wed, thurs, or Friday. Big thanks.

Ryan Jackson  
Chief of Staff  
U.S. EPA

Ex. 6 - Personal Privacy

**To:** Wehrum, William L.[wwehrum@hunton.com]  
**From:** Jackson, Ryan  
**Sent:** Tue 5/9/2017 12:23:49 AM

I have received some conflicting information from our mutual friends about your interest.

Should we have a further conversation on this?

Ryan Jackson

Chief of Staff

U.S. Environmental Protection Agency

Ex. 6 - Personal Privacy

**To:** Wehrum, William L.[wwehrum@hunton.com]  
**From:** Jackson, Ryan  
**Sent:** Sun 5/7/2017 8:30:16 PM  
**Subject:** RE: Checking In

My purpose in asking is that I have learned that PPO is not always informative.

We've picked you then we send you to PPO and once they start their vetting with getting you forms to fill out I just kind of have to wait. However, in that time, I'm hoping that PPO is being responsive to questions. I'm assuming none of that's happened in your case and you weren't even aware they wanted you to fill out the forms?

-----Original Message-----

From: Wehrum, William L. [mailto:wwehrum@hunton.com]  
Sent: Saturday, May 6, 2017 4:01 PM  
To: Jackson, Ryan <jackson.ryan@epa.gov>  
Subject: Re: Checking In

Thank you, Ryan.

> On May 5, 2017, at 6:38 PM, Jackson, Ryan <jackson.ryan@epa.gov> wrote:  
>  
> Bill, I wanted to ensure that you had seen this email or emails from PPO on the AA position.  
>  
> I didn't want the possibility that it was directed to a wrong email and possibly lack of contact be an indication that things would move slowly.  
>  
> Again, I appreciate your consideration and I don't want to bother you, however, I do want you to know you are everyone's first choice: PPO and the Administrator.  
>  
> Ryan.

> -----Original Message-----

> From: Locetta, Jennifer R. EOP/WHO  
> Sent: Wednesday, April 26, 2017 10:24 AM  
> To: Ex. 6 - Personal Privacy  
> Cc: Jackson, Ryan <jackson.ryan@epa.gov>  
> Subject: Checking In

> Hi Bill,

> I just wanted to check in with you. Our office has reached out to you several times regarding your clearance paperwork and I also put a call into you last week.

> We have not received any paperwork back from you for the clearance process. This paperwork primarily consists of the OGE-278 and the SF-86.

> Can you let me know if you are having issues accessing the systems? It would be great if we can get these forms back as soon as possible.

> Thanks! My cell is: EOP/Ex. 6 u need to reach out.

> Jennifer R. Locetta

> Special Assistant to the President

> Associate Director, Presidential Personnel Office

**To:** wwehrums@hunton.com[wwehrums@hunton.com]  
**From:** Jackson, Ryan  
**Sent:** Fri 5/5/2017 10:38:03 PM  
**Subject:** RE: Checking In

Bill, I wanted to ensure that you had seen this email or emails from PPO on the AA position.

I didn't want the possibility that it was directed to a wrong email and possibly lack of contact be an indication that things would move slowly.

Again, I appreciate your consideration and I don't want to bother you, however, I do want you to know you are everyone's first choice: PPO and the Administrator.

Ryan.

-----Original Message-----

From: Locetta, Jennifer R. EOP/WHO  
Sent: Wednesday, April 26, 2017 10:24 AM  
To: **Ex. 6 - Personal Privacy**  
Cc: Jackson, Ryan <jackson.ryan@epa.gov>  
Subject: Checking In

**Ex. 6 - Personal Privacy**

Hi Bill,

I just wanted to check in with you. Our office has reached out to you several times regarding your clearance paperwork and I also put a call into you last week.

We have not received any paperwork back from you for the clearance process. This paperwork primarily consists of the OGE-278 and the SF-86.

Can you let me know if you are having issues accessing the systems? It would be great if we can get these forms back as soon as possible.

Thanks! My cell is **EOP/Ex. 6** if you need to reach out.

Jennifer R. Locetta  
Special Assistant to the President  
Associate Director, Presidential Personnel Office





**From:** Inge, Carolyn  
**Location:** DCRoomARN3530CFTB/DC-Ariel-Rios-AO  
**Importance:** Normal  
**Subject:** Meeting with Air Liquide  
**Start Date/Time:** Wed 3/22/2017 7:00:00 PM  
**End Date/Time:** Wed 3/22/2017 7:45:00 PM  
[Air Liquide Meeting Request Administrator Pruitt.pdf](#)

Topic: Meeting with Air Liquide

Date: March 22

Time: 3:00 – 3:45

Location: Request 3530 WJCN or 4530 WJCN or 6530 WJC please (15 attendees are expected)

Required: [Dee.Martin@policyres.com](mailto:Dee.Martin@policyres.com); Kreutzer, David <[kreutzer.david@epa.gov](mailto:kreutzer.david@epa.gov)>

Cc: Kime, Robin <[Kime.Robin@epa.gov](mailto:Kime.Robin@epa.gov)>; Germann, Sandy [Germann.Sandy@epa.gov](mailto:Germann.Sandy@epa.gov);

Notes:

Include the attached request in the meeting invitation.

Directions: Please use the William Jefferson Clinton North Entrance located on your right as you exit the Federal Triangle Metro Station. Please arrive 20 minutes prior to the meeting with photo IDs to clear Security.

EPA Contact: For an escort from security to the meeting call (202) 564-4332; for all other matters call Robin Kime (202)564-6587

DEE MARTIN

Partner

[Dee.Martin@policyres.com](mailto:Dee.Martin@policyres.com)

T: +1.202.828.5818 | F: +1.202.857.2146

BRACEWELL LLP

2001 M Street NW, Suite 900 | Washington, D.C. | 20036-3310

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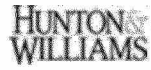
**From:** Delahoyde, Magdelana A. EOP/WHO  
**Location:** Dial-In: (202) 395-6392; Leader Code: 295 3131; Participant Code: 201 3669  
**Importance:** Normal  
**Subject:** CAFE-GHG Update Call  
**Start Date/Time:** Mon 11/20/2017 10:00:00 PM  
**End Date/Time:** Mon 11/20/2017 11:00:00 PM

**From:** Delahoyde, Magdelana A. EOP/WHO  
**Location:** Dial-In: (202) 395-6392; Leader Code: 661 0597; Participant Code: 345 2313  
**Importance:** Normal  
**Subject:** Call: Prep for California Meeting  
**Start Date/Time:** Mon 11/13/2017 8:30:00 PM  
**End Date/Time:** Mon 11/13/2017 9:30:00 PM

**From:** Lyons, Troy  
**Location:** Hearing Room 1152 WJC East  
**Importance:** Normal  
**Subject:** Mock Hearing for Senate Confirmed Nominees (10:00 AM)  
**Start Date/Time:** Fri 9/15/2017 2:00:00 PM  
**End Date/Time:** Fri 9/15/2017 4:00:00 PM

10:00 AM to 12:00 PM: Mock Hearing

**From:** Bolen, Brittany  
**Location:** DCRoomARN3500/OPEI  
**Importance:** Normal  
**Subject:** Call with Joe Stanko to Discuss Ozone - Call: 1-855-564-1700; Extension: 1104438;  
Participant Code: 234567  
**Start Date/Time:** Tue 7/25/2017 2:30:00 PM  
**End Date/Time:** Tue 7/25/2017 3:00:00 PM



**Joseph Stanko**

Partner

[jstanko@hunton.com](mailto:jstanko@hunton.com)

p 202.955.1529

[bio](#) | [vCard](#)

Hunton & Williams LLP  
2200 Pennsylvania Avenue, NW  
Washington, DC 20037

[hunton.com](http://hunton.com)

**From:** Bolen, Brittany  
**Location:** DCRoomARN3500/OPEI  
**Importance:** Normal  
**Subject:** Meeting with the Brick Industry Association  
**Start Date/Time:** Thur 6/15/2017 5:30:00 PM  
**End Date/Time:** Thur 6/15/2017 6:00:00 PM

Directions: Please use the **William Jefferson Clinton North Entrance located on your right as you exit the Federal Triangle Metro Station**. Please arrive 20 minutes prior to the meeting with photo IDs to clear Security.

EPA Contact: For an escort from Security to the meeting call (202) 564-4332; for all other matters call Robin Kime (202)564-6587.

Request: I am writing on behalf of the Brick Industry Association (BIA) to request a meeting with Administrator Pruitt. BIA is a national trade association representing clay brick manufacturers, distributorships, and their suppliers. Two-thirds of all the brick shipped in North American is manufactured by BIA members. In addition, many BIA member companies are family-owned small businesses. Many of BIA's members are subject to a recently-promulgated National Emissions Standard for Hazardous Air Pollutants for Brick Manufacturing (i.e., the "Brick MACT"). BIA has a pending challenge to this rule in the DC Circuit. BIA does not want to discuss the litigation with the Administrator. BIA does hope to discuss with the Administrator the enormous impact that the rule is having on the industry and some of BIA's ideas as to how the rule could be improved and the burden lessened. A group of BIA members will be in Washington, DC, on Thursday, June 15. A meeting that date would be ideal. If that does not work for Administrator Pruitt, we would appreciate any suggested alternative dates.

Contact:

Bill Wehrum

Partner

[wwehrum@hunton.com](mailto:wwehrum@hunton.com)<mailto:wwehrum@hunton.com>

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February 22, 2017

The Honorable E. Scott Pruitt  
Administrator  
U.S. Environmental Protection Agency  
1200 Pennsylvania Avenue NW  
Washington, D.C. 20460

Re: Meeting with Air Liquide S.A. Chairman and CEO Benoit Potier and American Air  
Liquide Holdings, Inc. Chairman and CEO Michael J. Graff

Dear Administrator Pruitt:

On behalf of Air Liquide and our over 20,000 U.S. employees, I write to congratulate you on your confirmation as the Administrator of the U.S. Environmental Protection Agency (EPA). Air Liquide is the world's largest manufacturer and distributor of industrial gases (e.g., hydrogen, nitrogen, and oxygen). We are headquartered in Houston, Texas, and we operate in every state in the U.S. Like you, we have long believed in finding the appropriate balance between protecting our natural resources and providing the regulatory certainty that allows our private sector to continue to lead the world in innovation.

To that end, I write to request a meeting with Air Liquide S.A. Chairman and CEO Benoit Potier who will be in Washington, D.C. on March 22, 2017 and me; we are available at your convenience. In addition to our leadership of Air Liquide:

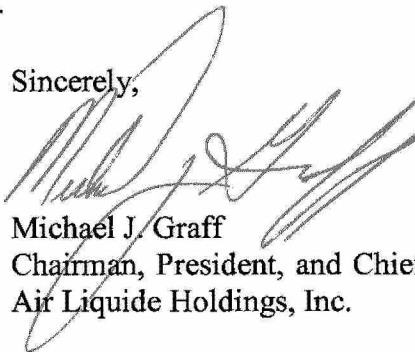
- Mr. Potier serves as the Chairman of the European Round Table (ERT). As such, Mr. Potier leads 50 major multinational corporations with combined revenues exceeding \$2.37 trillion that sustain 6.8 million jobs, many of whom invest significantly in the U.S. like Air Liquide. In this capacity, Mr. Potier works closely with global companies on issues related to the appropriate role of environmental regulation and effective ways to stimulate technological innovation.
- I serve on the Board of Directors and Executive Committee of the American Chemistry Council, as well as on the Board of Directors and Executive Committee of the National Association of Manufacturers. As you know, both organizations seek to strengthen the U.S. economy and increase domestic manufacturing jobs. My leadership role in these organizations enables me to hear from a broad array of domestic manufacturers about the environmental regulatory issues they face and how we can make these industries competitive again while also protecting our environment.

Mr. Potier and I would greatly appreciate the opportunity to discuss Air Liquide's work related to technological innovations that can continue to foster energy production and reliability while reducing environmental risk. Examples of Air Liquide's leadership in this area include:

- Reducing Water Use in Hydraulic Fracturing – Air Liquide has responded to concerns over the use of large quantities of water as part of the hydraulic fracturing process by using nitrogen or carbon dioxide foam-based fluids. The use of these fluids in the process has demonstrated water savings of nearly 50 percent.
- Reducing Carbon Emissions from Power Plants – Air Liquide has responded to the need to reduce carbon emissions from coal-fired power plants by being at the forefront of the development of oxy-combustion technology. This technology uses oxygen—instead of air—for combustion. This produces carbon dioxide enriched flue gas that can then be captured for either sequestration or use in enhanced oil recovery.

We look forward to discussing these technologies and more as you continue to contemplate your regulatory agenda at EPA. If you have any questions, please contact our Vice President for Communications and Public Affairs at [Michael.Rosen@airliquide.com](mailto:Michael.Rosen@airliquide.com) or 713-624-8023 or me at any time. We look forward to hearing from you.

Sincerely,



Michael J. Graff  
Chairman, President, and Chief Executive Officer American  
Air Liquide Holdings, Inc.

**To:** Dravis, Samantha[dravis.samantha@epa.gov]; Traylor, Patrick[traylor.patrick@epa.gov]; Mark Ryan[mr@ryankuehler.com]  
**From:** Brown, Samuel L.  
**Sent:** Mon 12/4/2017 1:26:55 AM  
**Subject:** Logistics | ELI Conference: EPA Policy Goals, Regulatory Reform, and Enforcement: What Does the Future Hold?  
[Policy and Enforcement Panel Overview \(ELI-ALICLE\).docx](#)

Hi Samantha, Patrick, and Mark,

I am looking forward to seeing you tomorrow afternoon, Monday, December 4. A reminder that our panel discussion is **3:00pm-4:30pm**. If possible, please try and be there by 2:45pm so we can go over a few logistical items. The event is at the Hunton & Williams DC office at 2200 Pennsylvania Avenue, NW (on Washington Circle). When you arrive, take the elevator up to the 9th Floor.

If you have any questions tomorrow, please feel free to call or text my cell at Personal Phone/Ex. 6

Thank you again for your participation in this event!

- Sam

**From:** Brown, Samuel L.  
**Sent:** Sunday, November 05, 2017 8:13 PM  
**To:** Dravis, Samantha; 'Traylor, Patrick'; 'Mark Ryan'  
**Subject:** ELI Conference | EPA Policy Goals, Regulatory Reform, and Enforcement: What Does the Future Hold?

Hi Samantha, Patrick, and Mark,

Thank you again for agreeing to participate in the ELI and ALI-CLE conference on the Clean Water Act in Washington D.C. on Monday, December 4 from 3:00pm – 4:30pm.

Attached is an overview of how I am thinking to structure our panel. The attachment includes representative moderated questions that I would suggest that I tee up for discussion. Again, the thought is no slide decks, just moderated discussion and then Q&A with the audience. I welcome your input and suggestions, in particular on the moderated questions. I welcome any subject matter that you would like to highlight or discuss. Samantha/Patrick, I understand there may be subject matter that is sensitive that you would like to not discuss, so I can tailor the conversation around any concerns that you may have.

I think it makes sense to have a short call to touch base. Does Wednesday or Friday this week work for you? Samantha/Patrick, if you have schedulers I am happy to work with them to get 30 minutes on your calendars.

Thanks so much and talk to you soon! – Sam



**Samuel Brown**

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**To:** Traylor, Patrick[traylor.patrick@epa.gov]  
**Cc:** Dravis, Samantha[dravis.samantha@epa.gov]  
**From:** Brown, Samuel L.  
**Sent:** Tue 8/15/2017 3:02:06 AM  
**Subject:** RE: Environmental Law Institute | Speaker Invitation

Hi Patrick,

Of course.

In terms of the panel's format, I think we have two options: (1) each of you speaks on a topic(s) with a slide deck and we leave 15 minutes at the end for Q&A; or (2) I prepare a list of questions on relevant topics and I ask each of you questions in a more informal conversation format. In my experience, I enjoy moderating panels that use the latter format. Using that format I think we can convey the same information, but the panels tend to be more interesting, with increased audience attention. That being said, I defer to your preference, either way works for me.

In terms of substance, the working title of the panel is: *EPA Regulatory Reform and Enforcement Trends: What Does the Future Hold?* Bottom line, I think most people outside the Agency are curious about the change(s) in direction of this EPA from the prior Administration on certain subject matter and the practical implications. For example, for this panel, in the context of enforcement, what are EPA's enforcement priorities; are there plans to modify the existing NEIs; what is the fate of the prior administration's focus on next generation compliance; etc. In the context of policy/regulatory reform, EPA's thoughts on the comments received as part of the regulatory reform efforts per Exec. Order 13777; what action item(s) have resulted/will result; thoughts on reform on how EPA conducts rulemaking/considers science; are there any planned organizational/institutional reforms; and, generally, an update on the priorities of the Trump Administration and Administrator Pruitt.

Bottom line is folks would love to hear from both of you, and the scope of the subject matter covered should only be what you're comfortable covering, so we can tailor the subject matter to fit your preferences. For example, if we use the latter format above, I would draft a set of questions and then have you screen them for sensitive subject matter that you don't want to cover as part of the panel and conversation.

In terms of the ELI event, other panels will cover (i) waters of the United States; (ii) citizen suits; (iii) State implementation: issues and opportunities; (iv) emerging issues in water quality; (v) stormwater and eNGO-related litigation; (vi) water transfers and the Second Circuit opinion;

among other issues. There are other confirmed and invited EPA speakers (from OGC, OW, and Regions), other federal agencies (*e.g.*, Corps), and state agencies (*e.g.*, Ben Grumbles, Maryland, Secretary of the Environment; Michael Lauffer, Chief Counsel, California State Water Resources Control Board; Tom Johnson, Solicitor General, West Virginia; and Basil Seggos, Commissioner, New York State, Department of Environmental Conservation), in addition to the private sector and academia.

I hope that gives you a better sense of the panel and the event. Please let me know if you have additional question or if you'd like to chat on the phone. I hope it works out that you're both able to participate and I look forward to working with you.

Samantha, FYI, my colleagues Rod Hastie and Joe Stanko were going to extend the invitation to you. After speaking with Rod, it appears they had not reached out yet, so I apologize if this conversation is coming out of the blue.

Thanks! – Sam

**HUNTON & WILLIAMS** **Samuel Brown**

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**From:** Traylor, Patrick [mailto:traylor.patrick@epa.gov]

**Sent:** Monday, August 14, 2017 4:57 PM